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Lost Names in the Paleozoic Lithostratigraphy of Arkansas

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Lost Names in the Paleozoic Lithostratigraphy of Arkansas

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by

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Abstract

The geology of Arkansas has been studied for nearly 160 years, and our understanding of it is continually evolving. Part of this ever-changing study is the nomenclature of the stratigraphy. From the early reports to today, several lithostratigraphic names have been proposed and abandoned to improve the accuracy and clarity of the understanding of Arkansas' geology. Over these 160 years of study, 214 names have been proposed for the Paleozoic beds of Arkansas, with nearly 80 of them currently in use today. These names are a testimony and legacy of the history of Arkansas' natural resource development and Arkansas' geologists.

Compilations of the Paleozoic stratigraphic nomenclature of Arkansas have been few and far between, with the major publications being from the geologic maps of Arkansas (Miser and Stone, 1929; Haley *et al*., 1976, revised 1993), two Arkansas Geological Survey publications (Croneis, 1930a; McFarland, 1998, revised 2004), as well as U.S. Geological Survey lexicon publications (Wilmarth, 1938; Keroher *et al*., 1966; Cohee and Wright, 1976; Lutrell *et al*., 1981). This study compiles all Paleozoic lithostratigraphic nomenclature, including all abandoned names (indicated by a dagger symbol [†]), as well as both formal and informal names, excluding only the subsurface nomenclature. Some names have been found have conflicting usage between the Arkansas Geological Survey and the U.S. Geological Survey (indicated by an asterisk [*]), requiring further clarification to reduce stratigraphic nomenclatorial problems.

Acknowledgments

I would like to take the time to forever thank some good folks who have helped make this work possible.

Firstly, my parents, who I'm sure had deep concerns for me when I was little, since I would constantly walk home with pockets full of rocks. They have always encouraged me to pursue my interests and supported me in everything that I've done. Thank you.

Secondly, my advisor, Dr. Manger. This work was his idea, but he let me steal it and run with it. I didn't mean for it to become my thesis, but here we are. I am appreciative for all the helpful insight and suggestions from him that have vastly improved this work.

Thanks to my committee members, Dr. Liner and Dr. McGilvery, for being willing to hear me yammer on about this thesis.

Also, a word of appreciation goes out to those I've met along the way. Some of whom have contributed to putting the idea of me going back to school in my head. I hope you know that this is partly your fault. You know who you are.

Lastly, special thanks goes out to you, dear reader. You have read at least one page of my thesis. Thank you.

Dedication

This thesis is dedicated to rocks. Without them, this work would not have been possible.

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I. INTRODUCTION

Problem Statement

For two-hundred years, the landscapes of Arkansas have been beckoning to writers and scholars from across the world to explore Arkansas' geologic history. These geologic travelers – amateurs, students, and preeminent geologists alike – have explored Arkansas in search of a new understanding of the Earth. Over the course of time, new discoveries have brought an improved understanding of the geology of Arkansas, and with it a better way to organize and label the stratigraphic record. Through this record, geologists have developed a nomenclatorial system for labeling the beds, which have provided a convenient method in conveying information. However, over time, the nomenclature evolves with improved geologic understanding, through either proposing new names or abandoning old names. Some proposed names do not become accepted into the geologic nomenclature and quickly become disused. Abandoned or disused names can become easily forgotten and lost to history. Because of this, there is a need to keep an updated record of both the names currently in use and the names that have been abandoned or not used.

The purpose herein is to provide such a compilation of both the informal and formal lithostratigraphic nomenclature of the Paleozoic rocks in Arkansas, as there have been scant compilations in the past. The subsurface nomenclature has been excluded from this study due to the numerous and variable terminology used in the oil and gas industry. Some names have problems that require further attention, such as discrepancies between the nomenclature used by the Arkansas Geological Survey, the U.S. Geological Survey, and other workers.

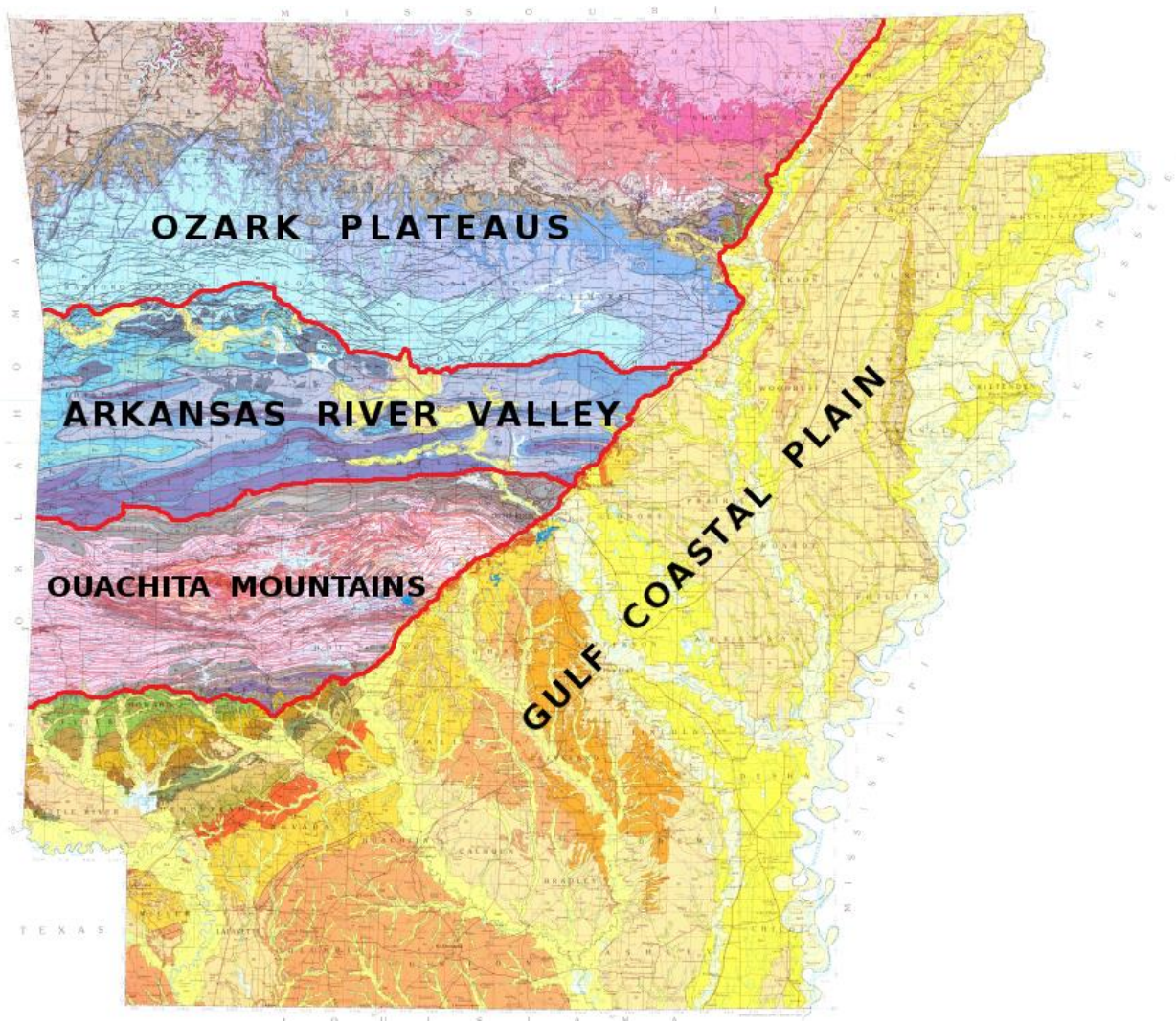

Figure 1. Geologic map of the state of Arkansas (modified from Haley *et al*., 1976, revised 1993) with the four major geologic provinces. The Paleozoic beds are found in the Ozark Plateaus, the Arkansas River Valley, and the Ouachita Mountain provinces. The Gulf Coastal Plain is comprised of Cretaceous and Cenozoic strata.

Study Area

The state of Arkansas can be roughly divided into two halves based on geologic age. A Paleozoic half covers the northwestern half of the state, while a Cretaceous and Cenozoic half, known as the Gulf Coastal Plain, covers the southwestern half. The boundary between the two has been called the Fall Line, a geographic boundary that separates a highland region from a lowland plain. The Fall Line extends from the northeast in Randolph County, Arkansas to Clark County, Arkansas, and to Sevier County, Arkansas in southwestern Arkansas. The Gulf Coastal Plain has been described in early geologic reports along with the Paleozoic beds, however, exclusion of the Gulf Coastal Plain from the study herein was done as the Paleozoic beds have significant material in itself that required reevaluation. Within the Paleozoic region of the state, the area can be further sub-divided into informal geologic provinces, which for the purposes of this study, three are indicated, although the number of provinces can vary among workers. These three provinces – the Ozark Plateaus, the Arkansas River Valley, and the Ouachita Mountains – are chosen based on the surficial geology unique to each region (Figure 1).

The Ozark Plateaus province, a collective term comprising of the Boston Mountains, the Salem Plateau, and the Springfield Plateau of northern Arkansas (Adamski *et al*., 1995), consists of beds that range in age from the Ordovician to the Pennsylvanian. These beds are predominantly carbonates deposited on a shallow shelf environment prone to multiple transgressive-regressive cycles, which have resulted in several thin beds with several names. In addition to carbonates, there are some shale beds, such as the Fayetteville Shale, a major natural gas producer that has been drilled in parts of the Ozark Plateaus, as well as to the south, in the Arkansas River Valley.

The Arkansas River Valley province in central and western Arkansas is a wide valley that has been used as a major transportation thoroughfare with Interstate 40, the Arkansas River Navigation System, as well as old, defunct railways running through the valley. This province is also known as the Arkoma Basin, which extends into southeastern Oklahoma and has been worked considerably for its natural gas resources from the Fayetteville Shale. On the surface, production from its coal resources within the Pennsylvanian strata have historically been a major resource development.

The Ouachita Mountain province consists of sequences of sandstones and shales sourced from a southerly and easterly direction, deposited on a stable shelf environment (Lowe, 1985). These beds, as old as the late Cambrian, produced thick, undifferentiated units, which have resulted in very little changes in the nomenclature. From the late Mississippian into the Pennsylvanian, a tectonic collision initiated the Ouachita Mountain orogeny with flysh sediment deposits along its flanks.

Each province has formations unique to their region, except for the Atoka Formation, which here is given consideration for use in both the Ozark Mountain province (shown on the geologic map of Arkansas (Haley *et al*., 1976, revised 1993) as undifferentiated Atoka Formation) and the Arkansas River Valley province (differentiated lower, middle, and upper Atoka Formation on the state geologic map). With this in mind, a tally of the names used in each region was recorded (Table 1), with the Atoka Formation, and four of its sub-units – Zone C, Zone P, Zone S, and

Zone W – belonging under the “Ozark Plateaus / Ark. River Valley” heading. Of these names, totaling 215, most of the names by far, are found in the Ozark Mountain province, where the rocks can be divided into several distinct groups, formations, members, and beds. The Arkansas River Valley is associated with the coal fields, which resulted in the creation of several names during the early days of the Arkansas Geological Survey. However, the Ouachita Mountain province has very thick, undifferentiated formations that have kept the number of named beds down. Also tallied is the current status of the names in each of the provinces regarding the name currently in use, abandoned or not used, proposed, or uncertain due to conflicting status between the U.S. Geological Survey and the Arkansas Geological Survey. Some names have been declared abandoned, replaced, or otherwise phased out by these organizations, while other names have been abandoned by one organization, but not the other; creating some confusion on the proper terminology and the correct stratigraphic boundaries for other names.

Previous Studies

The first to introduce the world to the geology of Arkansas was L. Bringier who wrote a letter dated 20 March 1818, later published in *The American Journal of Science and Arts* in 1821, describing the general geology and mineralogy in the regions around the Mississippi River. Following Bringier was Henry Rowe Schoolcraft who was also exploring Arkansas during the same time and published his findings in a book in 1821. These early works introduced the minerals and geology provided by Arkansas, although no attempt was made to create any stratigraphic study of the state.

The first attempt to study the stratigraphy was in 1857, nine years after the first record of coal production (AGCC, 1942, revised 1959), by David Dale Owen, the newly appointed first State Geologist of Arkansas (Owen, 1858). Owen, the former State Geologist of Indiana (1837-1839, 1859-1860) and Kentucky (1854-1857) (Hendrickson, 1943), set out to produce two comprehensive volumes on the Arkansas geology as part of the first geological survey of Arkansas. During this survey, from 1857-1859, Owen was the first to establish lithostratigraphic names, using names such as the "Archimedes limestone," the "Encrinital limestone," and the "Pentremital limestone" which he had used in his other state surveys. As well as names like the "Dotson black sheety shale" and the "Gilbert shales," which he named from local land owners (Owen, 1858, 1860). Although, these names that Owen coined have since been abandoned in favor of geographic names that conform to the North American Code of Stratigraphic Nomenclature (NACSN, 2005).

Following Owen's survey, political tensions in the nation rose, ultimately leading to Arkansas' succession from the United States and joining the Confederate States of America. During this time and during the Civil War, no geological surveys were conducted in Arkansas. But, soon after the war ended, efforts to re-establish a geological survey began. An 1866 bill establishing a second geological survey was proposed, but failed to pass the legislature and a second attempt was proposed by the Governor in 1868, the same year as Arkansas' readmission into the Union. The Governor's attempt failed, but a bill eventually passed in 1871 and the state continued funding a survey until 1875. However, during these years, four State Geologists were appointed, each producing very little work and no new nomenclature contributions by the survey (Branner, 1894).

Coal production increased dramatically in the 1870's with railroad expansion into the coal fields of western Arkansas and again in 1887 with further railroad expansion (AGCC, 1959). In 1888, the Arkansas Geological Survey, once again re-established and under the direction of John C. Branner, began printing a series of volumes as part of its Annual Report series, which ran from the years 1888 through 1892; the last of which was published in 1900. Each of these reports detailed an in-depth study – mostly with industrial purpose – of a particular aspect of the geology of Arkansas, such as coal, limestones, ores, etc. These studies were conducted by respected geologists of the likes of Henry Shaler Williams, Arthur Winslow, and Frederick Simonds, all three of whom have contributed to introducing several new lithostratigraphic names for Arkansas. Winslow (1888) was the first to present the new nomenclature for the Arkansas River valley region in west-central Arkansas, however, he extended usage from the Appalachians to

divide the Carboniferous beds into three so-called "divisions": the "Lower or Eastern Coal Bearing Division," the "Intermediate Barren Division," and the "Upper or Western Coal Bearing Division." The Lower Division comprised of rocks with thin beds coal, now known as the Atoka Formation. The Intermediate Barren Division represents the interval of sandstone that lacks any coal beds, and has become known as the Hartshorne Sandstone. The Upper Division is the youngest Paleozoic beds seen on the surface of Arkansas, of which they have significant coal beds of economic importance. Winslow's work continued in a paper written by John James Stevenson (1896), a founding member and president of the Geological Society of America, in which Stevenson attempted to correlate an unpublished work by Winslow of west-central Arkansas with an unpublished work of east-central Oklahoma by H.M. Chance. This paper introduced several new names for the beds of Arkansas and Oklahoma, several of which were given the rank of "Stage." In current usage, the term "stage" refers to a chronostratigraphic unit of time, however, Stevenson seems to use it in a lithostratigraphic sense (Keyes, 1901). However, it has also been argued that it was intended to be used in the chronostratigraphic sense instead (Collier, 1907). It is not clear which was Stevenson's intentions, though regardless, his correlation was significantly in error and the nomenclature used in his work was discarded by other geologists (Keyes, 1901).

In 1891, a significant work by Branner (1891) and Simonds (1891) published by the Arkansas Geological Survey, further contributed to the stratigraphic study of Arkansas with several new names for the Carboniferous beds of Washington County. This work created, what was at the time, the most detailed stratigraphic chart in Arkansas (figure 2), with the names "Boone,"

"Fayetteville shale," "Batesville sandstone," and "Kessler limestone" still in use today. This chart also illustrates conflicting interpretations between the state geologist, J.C. Branner, and his colleague, H.S. Williams, in regard to a group name of the Carboniferous. Williams (1891a) had published in the same year U.S. Geological Survey Bulletin 80, in which he proposed the names, Osage Group and Genevieve Group, for two succeeding intervals of Carboniferous beds. However, Branner (1891) thought a more representative interval for the Genevieve Group could be used for northern Arkansas, to which he proposed the name, Boston Group, after the Boston Mountains of northwestern Arkansas. Branner's interpretation remained in use for over a decade before the nomenclature of the Boston Group was redefined, while Williams' Genevieve Group was excluded from use in Arkansas, although Williams' Osage Group was accepted into the Arkansas nomenclature. H. S. Williams continued to introduce new lithostratigraphic names in three papers in the *American Journal of Science* (Williams, 1894; 1895; 1899) and a final time in the 1892 Annual Report for the Arkansas Geological Survey, the final report of Branner's survey (Williams, 1900).

Soon after the first Arkansas commercial natural gas well was drilled near Mansfield, Sebastian County in 1902 (AGCC, 1959), the United States Geological Survey began studying central, western, and northern Arkansas, to which it published several Geological Atlases, Professional Papers, and Bulletins. These early 20th century publications were among those that introduced several new stratigraphic names to the geologic lexicon (figure 3). George I. Adams and E.O. Ulrich (1904) launched the first publication to do so by writing on all of the known beds in northern Arkansas and drafting a complete stratigraphic column for this region. Their work

became the first major update to the stratigraphic nomenclature for northern Arkansas. In it, they corrected a miscorrelation by Simonds (1891) with the Wyman Sandstone, the Fayetteville Shale, the Batesville Sandstone, and the Marshall Shale, which he had mistakenly applied these names to the wrong beds (Adams and Ulrich, 1904). They also refined the stratigraphic nomenclature by removing the last of Owen's usage of non-geographic terminology: the Archimedes Limestone, the Pentremital Limestone, and the Millstone Grit. After this publication, both Ulrich (1911, 1915) and Adams (1905) continued in their stratigraphic studies of Arkansas, along with colleagues, J.A. Taff (1905) and A.H. Purdue (1907), each further refining the stratigraphy of northern Arkansas, as well as A.J. Collier (1907), who worked in the Arkansas River valley and published a work on the Carboniferous coals.

THE FORMATIONS OF WASHINGTON COUNTY.

System.	Series.	Group.	Approximate Equivalence. (H. S. Williams)	Washington County.
Carboniferous or Pennine.	Coal Measures or Pennsylvanian (H. S. Williams)			Millstone grit.
		Boston (Branner). Genevieve (H. S. Wms).	"Chester." "St. Louis." "Warsaw."	Kessler limestone (Simonds.) Coal-bearing shale (Simonds) Pentremital limestone (Simonds) Washington shale and sandstone (Simonds). Archimedes limestone (Simonds). Marshall shale (Branner).
	Lower Carboniferous or Mississippian (H. S. Wms.)	Osage (H. S. Wms).	"Keokuk." "Burlington."	Batesville sandstone (Branner). Fayetteville shale (Simonds). Wyman sandstone (Simonds). Boone chert and limestone (Branner).
Devonian?				Eureka shale (Branner).
Silurian.				(Sandstones).

Figure 2. The first Paleozoic stratigraphic chart of Arkansas including several new lithostratigraphic names for northwestern Arkansas, some of which are still in use. The geologists credited to naming each unit are noted in parentheses (Branner, 1891).

In 1909, Purdue explored the stratigraphy of the Ouachita Mountains of Arkansas in an effort to produce the first detailed study of the region. He published two works in the same year, one of these was an abstract of a Geological Society of America presentation given on December 30, in which he introduced a series of lithostratigraphic names for the region, however, three of these names were promptly abandoned in favor of names used in his other work of the same year (Purdue, 1909a). This other publication, a book titled "The Slates of Arkansas", was published by the Arkansas Geological Survey and became the first detailed study of the Ouachita Mountains region, encompassing all available beds from the Cambrian to the Pennsylvanian (Purdue, 1909b). Purdue (1910) further added to this study with a paper in the *Journal of Geology* with the addition of a new name. Following this, was a significant paper by E.O. Ulrich (1911), who not only introduced a new name for the Ouachitas, but also correlated stratigraphic columns across the United States to create an updated, large-scale overview of the Paleozoic stratigraphy of the United States.

Purdue then published one more paper, in which new lithostratigraphic names were proposed with assistance from up-and-coming USGS geologist, Hugh D. Miser (Purdue and Miser, 1916). This work returned to the Ozark Mountains to further refine the stratigraphic column with the addition of seven new lithostratigraphic names. Miser (1918; 1920) published additional works detailing the Ouachita Mountains and proposing three more names. In 1929, Miser worked as an editor for the first geologic map of the state of Arkansas in cooperation with the Arkansas Geological Survey (Miser and Stone, 1929), once again re-established starting in 1923 under the direction of J.C. Branner's son, George C. Branner (NRC, 1932). This was the first publication to

incorporate the stratigraphy of the entire state of Arkansas. In it, detailed stratigraphic columns for the geologic regions in the state were produced with three new names proposed for the Ozark Plateaus.

After the publication of the state geologic map, several geologists began making contributions to the stratigraphy of Arkansas. In 1930, Carey Croneis published one of the most comprehensive volumes ever printed on the Paleozoic stratigraphy of Arkansas. Croneis (1930a) wrote on all three Paleozoic provinces, including the stratigraphy, structural geology, and petroleum geology, along with stratigraphic charts. Although he did not formally propose any new lithostratigraphic names, his comprehensive work remains a historical landmark for Arkansas geology. Other geologists include Cooper (1933) and Stearn (1935) both proposed new names for beds in the Ouachitas, while McKnight (1935) and Henbest (1953) worked in the Ozarks. In 1950, refinement was done to the Pennsylvanian stratigraphy of the Arkansas River valley leading to abandonment of some names (Hendricks and Parks, 1950). U.S. Geological Survey geologists Boyd R. Haley, Thomas A. Hendricks, and E.A. Merewether published in a series of Information Circulars from 1961 to 1977, including two reprinted by the USGS, which studied the Pennsylvanian beds of Arkansas. Henbest (1962) further contributed to the Pennsylvanian stratigraphy, while Gordon (1964) proposed the “Imo Formation”, but due to new findings and the publication in press, issued a footnote abandoning the name in the same paper. In 1965, future University of Arkansas professor, Robert C. Morris wrote a doctoral dissertation on the geology of the Jackfork Sandstone in the Ouachita Mountains of Arkansas, in which he proposed new names. Following this, a paper was published abandoning Morris’ nomenclature in favor of

that used in Oklahoma (Walthall, 1967). Morris, unconvinced the Oklahoma usage is adequate for Arkansas, published a paper replacing Walthall's nomenclature (Morris, 1971). The next significant and historic publications came in 1976 and 1993 with an update and revision to the geologic map of the state of Arkansas (Haley *et al.*, 1976; 1993). In 1998, the Arkansas Geological Survey published a Circular detailing the current stratigraphic nomenclature of the entire Arkansas, the first of its kind and another historical milestone, like Croneis (1930a) in terms of comprehensive stratigraphy (McFarland, 1998).

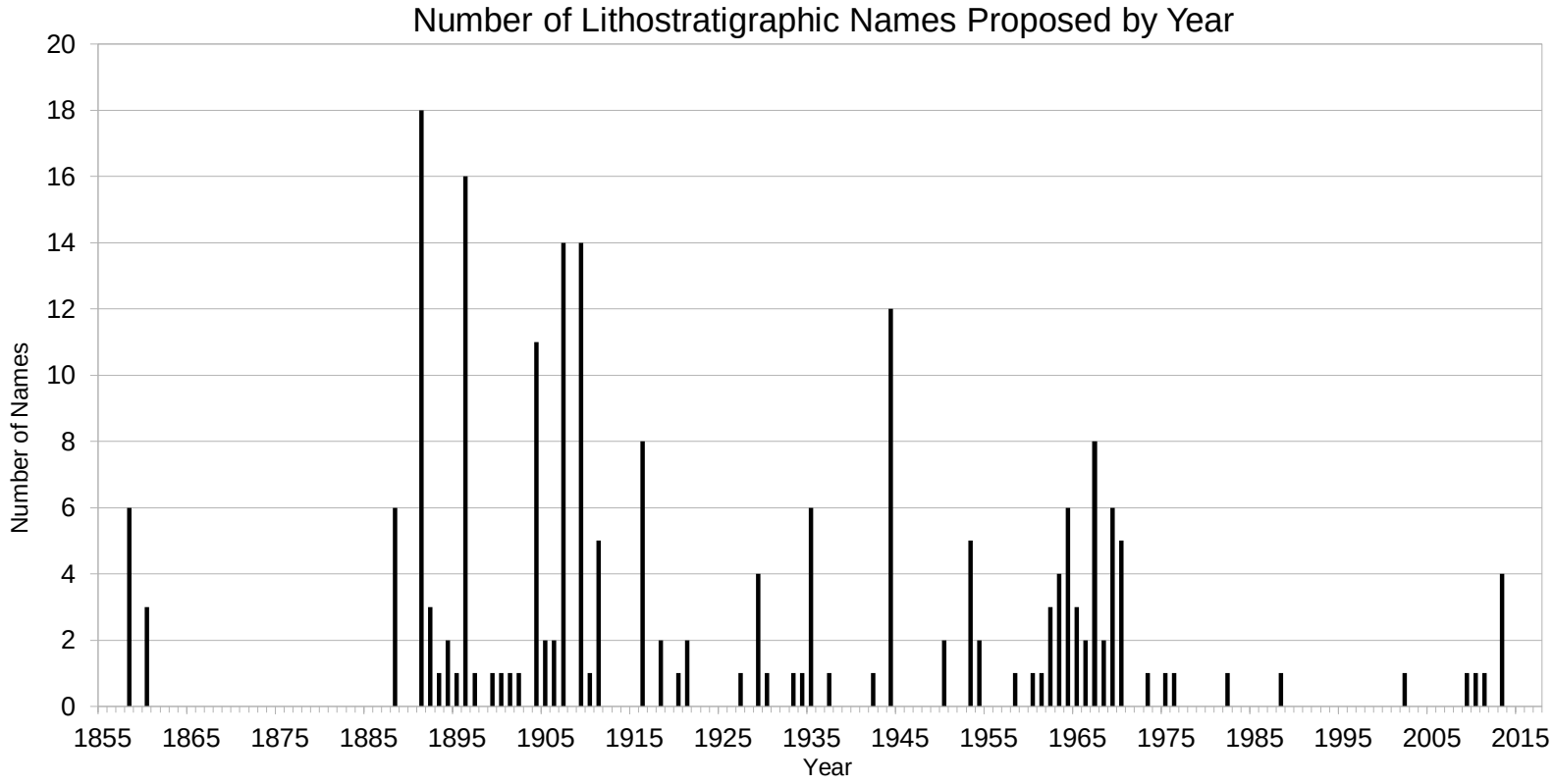

Figure 3. The number of lithostratigraphic names proposed for the Paleozoic beds of Arkansas over time. Notable events include D. D. Owen's reports of the Arkansas Survey (1858 and 1860), J.C. Branner's Annual Reports of the Survey (1888-1900), and the early USGS publications (1904-1921). Cullison (1944) proposed several names for the Ozarks and several other names were proposed in theses and papers in the 1960s and early 1970s.

Methodology

The nomenclature herein are from publications that describe their usage in Arkansas. The publications used are from various journals, state surveys, the U.S. Geological Survey, Ph.D. dissertations, as well as Honors and Masters theses. Most notably, a series of publications by the U.S. Geological Survey on the geologic nomenclature (Wilmarth, 1938; Keroher *et al*., 1966; Cohee and Wright, 1976; Lutrell *et al*., 1981) have provided a wealth of information on several of these names. The U.S. Geological Survey has recently developed the National Geologic Map Database (NGMDB), an online database that includes a stratigraphic lexicon resource. This database pulls together nomenclature from various sources to establish a convenient resource for stratigraphic lexicon. The NGMDB is used here as a tool for cross-reference, but discrepancies have been found, causing some confusion in proper usage of some names, which is noted where applicable. Two other notable publications published by the Arkansas Geological Survey (Croneis, 1930a; McFarland, 1998, revised 2004) have also provided much information for the past and present nomenclature used by the Arkansas Geological Survey.

In the historical literature of the 19th and early 20th centuries, there was no formal standard for the stratigraphic nomenclature of North America. This resulted in some proposed names being named for non-geographic locations or given no type sections. In 1933, several geologists from the Association of American State Geologists, the U.S. Geological Survey, the American Association of Petroleum Geologists, and the Geological Society of America, agreed upon a standard of stratigraphic nomenclature (Ashley *et al*., 1933). This was the first of a series of

standards that has begat the current North American Code of Stratigraphic Nomenclature (NACSN, 2005).

In the historical literature, the informal standard of early reports was to capitalize only the first part of a unit's name and write the rank or lithic unit as lowercase (e.g. Atoka formation, Fayetteville shale, etc.). This method of writing a name requires attention to the author's usage of the rank or lithic unit in order to distinguish the author's intent as either part of a unit's name or as a general descriptive term (e.g. the Chester group as used by Adams and Ulrich (1904) when referring to the beds of Chester age, not a group of beds called the Chester Group). Today, the Code of Stratigraphic Nomenclature details the proper standards for naming and writing both the formal and informal names, including capitalizing both parts of a unit's formal name (NACSN, 2005).

Also prevalent in the historical literature is a lack of type sections, which the latest Code of Stratigraphic Nomenclature requires a type section or a type locality to be designated for all new names (NACSN, 2005). Type sections (or type localities) must be designated in the publication that proposes a new name. Although, some publications have designated a type section in a later publication after the name was proposed. These type sections are now considered as violating the code, however they can be considered as a primary reference section instead.

For each name listed, the information given follows a uniform template in an effort to convey as much information as possible in a clear and concise manner. The template is as follows:

†*NAME & RANK

Names that are abandoned, not recently proposed, or not in use are indicated by the symbol, †. An asterisk, *, indicates names that have some confusion regarding the current status of the name, such as a discrepancy between the U.S. Geological Survey and the Arkansas Geological Survey. The name may be followed by one or more ranks and/or lithic units (e.g. Formation, Member, Sandstone) separated by a forward slash, /, indicating any and all currently accepted usage of the name.

Example: Chattanooga Shale / Formation

Age:

Using information from several sources, in particular, the Geologic Map of Arkansas (Haley *et al*., 1976, revised 1993), Arkansas Geological Survey Information Circular 36 (McFarland, 1998, revised 2004), two theses (Wright, 2002; Jusczuk, 2002), and an AAPG paper (Ethington *et al*., 2012), geologic ages have been determined based on the nomenclature to correlate abandoned names to the current chronostratigraphic nomenclature and to provide current lithostratigraphic names with ages on the 'Series' level.

Example: Whiterockian Series, Ordovician

Nomenclatorial Assignment(s);

This is a chronologic listing of all known varieties of the usage of the name, followed by the reference that first used that usage of the name in Arkansas. This is to illustrate the first occurrence in Arkansas of each variation of a name. This is not a list of formally recognized

names, but rather a historical review of the nomenclature. Some names have reverted back to a prior name (i.e. Boggy formation of the Krebs group to Boggy formation), but because most of these names were simply phased out from one to another, if at all, there is no clear reference for many of these names that indicate when they reverted back to a previous name. As such, reversions of the names are not shown here. Capitalization of the names are preserved here to illustrate historical usage of the names from times when it was standard to write lithostratigraphic ranks and lithic units in lowercase, rather than uppercase as is the standard today.

Example: Boggy shale (Hendricks and Parks, 1950)
Boggy formation (Reinemund and Danilchik, 1957)
Boggy formation of the Krebs group (Haley, 1961)

Sub-Division(s):

An alphabetical list of all sub-units associated with the unit as used in Arkansas, followed by the first reference of that name used in Arkansas. If the sub-unit is currently considered abandoned, the '†' symbol will precede the name.

Example: Charleston coal bed (Miser and Stone, 1929)
†Tennessee Sandstone Member (Collier, 1907)

Previous Name(s):

A chronological list of all names that preceded this unit in Arkansas, followed by the first Arkansas reference. For names that are no longer in use, the '†' symbol will precede the name.

Example: †Eureka Shale (Branner, 1891; Simonds, 1891)

†Noel Shale (Adams and Ulrich, 1904)

Replaced By:

A chronological list of all names that succeeded this unit in Arkansas, followed by the first Arkansas reference. For any names that are no longer in use, the '†' symbol will precede the name.

Example: †Ada Limestone (Shilder, 1937)

†Cape Limestone (Templeton and Willman, 1963)

Part of the Boone Limestone / Formation. Other names were discarded and this interval reverted back to its previous name

Formal Designation:

A list of all current, formally recognized names accepted by the U.S. Geological Survey and the Arkansas Geological Survey. If a name is in use, it is followed by "(formal)" or "(informal)" to illustrate the proper usage of the name. For names that are no longer in use, the word "Abandoned" will be listed to indicate names that are no longer used by the USGS or AGS, or the words "Not in Use" will be listed to indicate names that were never used by the USGS or AGS.

Example:	U.S. Geological Survey:	Fayetteville Shale	(formal)
	Arkansas Geological Survey:	Fayetteville Shale	(formal)

Regional Distribution:

The geographic distribution of the formation. Some formations have had their extent altered over time as the nomenclature changed, but the known distribution of each abandoned name is listed. For each name that is currently in use, the current extent of that name is listed. Each distribution list is arranged with Arkansas listed first (with a geographic region within Arkansas, e.g. southwest, northern, etc.), followed by each other state in alphabetical order.

Type Locality:

The type locality or type area of the unit, if designated. A type locality or type area can only be designated in the original reference of the name.

Type Section:

The type section of the unit, if designated. A type section can only be designated by publishing a measured section of the unit in the original reference of the name.

Primary Reference Section:

The primary reference section of the unit, if designated. A primary reference section can be designated by publishing a measured section of the unit in any publication. Some publications have declared a type section for a unit in a publication issued after the unit had been proposed, which is interpreted today as being the primary reference section, rather than a type section.

Origin of Name:

The origin of the unit's name with a descriptive category enclosed in brackets to clarify what the unit was named after (e.g. town, river, topographic feature, etc.).

Example: Irons Fork Mountain [topographic feature], Polk County, Arkansas

Original Reference:

A full citation of the publication that first used this name, along with a listing of the page numbers that use this name for further reference.

II. LITHOSTRATIGRAPHIC NOMENCLATURE OF THE PALEOZOIC

The following is a list of the nomenclature of the Paleozoic lithostratigraphy of Arkansas found at the surface, including formal and informal names, as well as abandoned and current names.

†ADA LIMESTONE

Age:

Cincinnatian Series, Ordovician

Age thought to be equivalent or near-equivalent to the Fernvale Limestone (Shideler, 1937)

Nomenclatorial Assignment(s):

Ada Limestone (Shideler, 1937). Shideler did not use state a complete name, only that it was named ‘Ada’ and that it was a limestone unit

Sub-Division(s):

None

Previous Name(s):

Part of the upper Polk Bayou Limestone (Williams, 1899)

Fernvale Limestone (Purdue and Miser, 1916)

Replaced By:

Fernvale Limestone. The Ada Limestone name was discarded

†Cape Limestone (Willman and Templeton, 1953)

Fernvale Limestone. The Cape Limestone name was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas; Illinois, Missouri, and Oklahoma (Shideler, 1937)

Type Locality:

Lawrence Quarry, Pontotoc County, seven miles southwest of Ada, Oklahoma (Shideler, 1937)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Ada [town], Pontotoc County, Oklahoma (Shideler, 1937)

Original Reference:

Shideler, W.H., 1937, Fernvale correlations (abstract): Proceedings of the Geological Society of America 1936, p. 367-368

†APPLETON STAGE

Age:

Atokan Series, Pennsylvanian (Wilmarth, 1938; Keroher *et al.*, 1966)

Nomenclatorial Assignment(s):

Appleton Stage of the Coal Measures (Chance and Winslow *in* Stevenson, 1896)

Sub-Division(s):

†Cross Plains Sandstone (Chance and Winslow *in* Stevenson, 1896)

†Russellville Shales (Chance and Winslow *in* Stevenson, 1896)

†Washburn Sandstones (Chance and Winslow *in* Stevenson, 1896)

Previous Name(s):

Part of the †Lower or Eastern Coal Bearing Division (Winslow, 1888; Collier, 1907)

Part of the unnamed "sandstones and shales" (Griswold, 1892)

Replaced By:

Part of the middle Atoka Formation (Collier, 1907; Wilmarth, 1938). The area north of the Arkansas coal fields changed to the †Winslow Formation name, while the southern parts in the coal field, were known as the Atoka Shale (Collier, 1907; Croneis, 1930) until the †Winslow Formation was abandoned by Purdue (1909a) in favor of the Atoka Formation

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas; Oklahoma (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Appleton [town], Pope County, Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Original Reference:

Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 51-52

†ARCHIMEDES LIMESTONE

Age:

Chesterian Series, Mississippian

This is an age equivalent to Pitkin Limestone / Formation (Adams and Ulrich, 1904; Easton, 1942; Wright, 2002)

Nomenclatorial Assignment(s):

Archimedes limestone (Owen, 1858)

Archimedes limestone of the Boston group (Branner, 1891; Simonds, 1891)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

The Pitkin Limestone / Formation (Adams and Ulrich, 1904) and part of the upper Fayetteville Shale (Easton, 1942)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas (Owen, 1858; Keroher *et al*., 1966); Illinois (Keroher *et al*., 1966), Indiana (Owen, 1838), Iowa (Hall, 1858), Kentucky (Owen, 1857), Missouri (Shumard, 1855; Keroher *et al*., 1966), and Oklahoma (Drake, 1897; Keroher *et al*., 1966)

Type Area:

Indiana (Owen, 1838)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

The bryozoan fossil *Archimedes* found within the unit (Owen, 1838; Simonds, 1891)

Original Reference:

Owen, D.D., 1838, Report of a geological reconnoisance of the state of Indiana; made in the year 1837: J. W. Osborn and J.S. Willetts, Indianapolis, 34 p

ARKANSAS NOVACULITE / NOVACULITE FORMATION

Age:

Ulsterian Series, Devonian to Kinderhookian Series, Mississippian (Jusczuk, 2002; McFarland, 1998, revised 2004)

Lower Division of the Arkansas Novaculite: Ulsterian to Erian Series, Devonian (Jusczuk, 2002; Haley *et al*., 1993)

Middle Division of the Arkansas Novaculite: Erian Series, Devonian to Kinderhookian Series, Mississippian (Jusczuk, 2002; Haley *et al*., 1993)

Upper Division of the Arkansas Novaculite: Kinderhookian to Meramecian Series, Mississippian (Jusczuk, 2002)

Nomenclatorial Assignment(s):

Arkansas novaculite (Purdue, 1909a)

Sub-Division(s):

Lower Division (Miser and Purdue, 1929)

Middle Division (Miser and Purdue, 1929)

Upper Division (Miser and Purdue, 1929)

†Caddo Gap Novaculite (uncertain if sub-division or separate formation) (Cooper, 1933)

Previous Name(s):

Unnamed “novaculite” (Schoolcraft, 1819)

Unnamed “novaculites,” and descriptive trade names “Arkansas whetstone,” “Ouachita stone,” “Arkansas novaculite,” and “Arkansas novaculite formation” (Griswold, 1892)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Arkansas Novaculite	(formal)
	Lower Division of the Arkansas Novaculite	(informal)
	Middle Division of the Arkansas Novaculite (informal)	
	Upper Division of the Arkansas Novaculite	(informal)
Arkansas Geological Survey:	Arkansas Novaculite	(formal)
	Arkansas Novaculite Formation	(formal)
	Lower Division of the Arkansas Novaculite	(informal)
	Middle Division of the Arkansas Novaculite (informal)	
	Upper Division of the Arkansas Novaculite	(informal)

Regional Distribution:

West-central Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Area:

Central Arkansas (Purdue, 1909a)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Named from quarries in Arkansas (especially near Hot Springs, Garland County) and for fact that the quarried rocks have long been known to the trade as "Arkansas Novaculite," as well as "Arkansas whetstone" and "Ouachita stone" (Griswold, 1892; Wilmarth, 1938; McFarland, 1998, revised 2004). Griswold (1892) used the name in the trade sense, while Purdue (1909a) was the first to apply the name "Arkansas Novaculite" as a geologic formation name.

Original Reference:

Purdue, A.H., 1909a, Slates of Arkansas: Geological Survey of Arkansas, p. 30, 39-40

ATOKA FORMATION

Age:

Atokan Series, Pennsylvanian (Haley et al., 1976, revised 1993; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Atoka shale (Collier, 1907)

Atoka sandstone (Purdue, 1909a)

Atoka Formation of the Winslow Group (Branner, 1927)

Sub-Division(s):

†Greenland Sandstone Member (Henbest, 1953)

†Zone C / Sandstone Unit C (Merewether, 1967)

†Zone P (Haley, 1966)

†Zone S (Merewether, 1967)

†Zone W (Haley, 1966)

Trace Creek Member / Shale Member (now part of Bloyd Formation / Shale) (Henbest, 1962)

Previous Name(s):

Part of the †Lower or Eastern Coal-Bearing Division (Winslow, 1888)

†Appleton Stage (including †Cross Plains Sandstone, †Russellville Shales, and/or †Washburn Sandstones), †Booneville Stage, and/or †Danville Stage of the †Coal Measures

(Winslow *in* Stevenson, 1896). These names were applied to use in the coal fields of Arkansas.

†Millstone Grit (Branner, 1891; Simonds, 1891; Croneis, 1930a)

†Winslow Formation (Adams and Ulrich, 1904). The area north of the Arkansas coal fields changed to this name, while the southern parts in the coal field were known as the Atoka Shale (Collier, 1907; Croneis, 1930a)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Atoka Formation	(formal)
Arkansas Geological Survey:	Atoka Formation	(formal)
	upper Atoka Formation	(informal)
	middle Atoka Formation	(informal)
	lower Atoka Formation	(informal)

Regional Distribution:

West-central and central Arkansas; New Mexico, Oklahoma, and Texas (McFarland, 1998, revised 2004)

Type Area:

Frontal Ouachita Mountains, Oklahoma (Taff and Adams, 1900)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Atoka [town], Atoka County, Oklahoma

Original Reference:

Taff, J.A. and Adams, G.I., 1900, Geology of the eastern Choctaw coal field *in* Twenty-First Annual Report of the United States Geological Survey, 1899-1900, part 2, General geology, economic geology, Alaska: U.S. Geological Survey Annual Report, p. 272, 273-274

†ATOKA FORMATION – ZONE C / SANDSTONE UNIT C

Age:

Atokan Series, Pennsylvanian (Merewether, 1972)

Nomenclatorial Assignment(s):

zone c of the Atoka Formation (Merewether, 1967)

sandstone unit C of the Atoka Formation (Merewether, 1972)

Sub-Division(s):

None

Previous Name(s):

Part of the †Lower or Eastern Coal-Bearing Division (Winslow, 1888)

Part of the †Appleton Stage (including †Cross Plains Sandstone, †Russellville Shales, and/or †Washburn Sandstones), †Booneville Stage, and/or †Danville Stage of the †Coal Measures (Winslow *in* Stevenson, 1896). These names were applied to use in the coal fields of Arkansas

Part of the †Millstone Grit (Branner, 1891; Simonds, 1891; Croneis, 1930a)

Part of the †Winslow Formation (Adams and Ulrich, 1904)

Part of the upper Atoka Formation. The area north of the Arkansas coal fields changed to the †Winslow Formation name, while the southern parts, like this area, in the coal field were

known as the Atoka Shale (Collier, 1907; Croneis, 1930a) until the †Winslow Formation was abandoned by Adams and Ulrich (1904) in favor of the Atoka Formation

Replaced By:

Part of the upper Atoka Formation. “Zone C” and “Sandstone Unit C” both were discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

West-central Arkansas (Mereweather, 1972)

Type Area:

Johnson and Pope Counties, Arkansas (Mereweather, 1972)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated

Original Reference:

Merewether, E.A., 1967, Geology of Knoxville quadrangle, Johnson and Pope Counties,

Arkansas: Arkansas Geological Commission Information Circular, n. 20-E, p. 6, 9, 13, pls. 1, 2, 4

†ATOKA FORMATION – ZONE P

Age:

Atokan Series, Pennsylvanian (Haley, 1966)

Nomenclatorial Assignment(s):

zone p of the Atoka Formation (Haley, 1966)

Sub-Division(s):

None

Previous Name(s):

Part of the †Lower or Eastern Coal-Bearing Division (Winslow, 1888)

Part of the †Appleton Stage (including †Cross Plains Sandstone, †Russellville Shales, and/or †Washburn Sandstones), †Booneville Stage, and/or †Danville Stage of the †Coal Measures (Winslow *in* Stevenson, 1896). These names were applied to use in the coal fields of Arkansas.

Part of the †Millstone Grit (Branner, 1891; Simonds, 1891; Croneis, 1930a)

Part of the †Winslow Formation (Adams and Ulrich, 1904)

Part of the Atoka Formation. The area north of the Arkansas coal fields changed to the †Winslow Formation name, while the southern parts, like this area, in the coal field were known as the Atoka Shale (Collier, 1907; Croneis, 1930a) until the †Winslow Formation was abandoned by Adams and Ulrich (1904) in favor of the Atoka Formation

Replaced By:

Part of the Atoka Formation. “Zone P” was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

West-central Arkansas (Haley, 1966)

Type Area:

Logan, Johnson, and Sebastian Counties, Arkansas (Haley, 1966)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated

Original Reference:

Haley, B.R., 1966, Geology of Barber quadrangle, Sebastian County and vicinity, Arkansas: Arkansas Geological Commission Information Circular, n. 20-C, p. 4-6, 8, 14-18, 20-21, pls. 1, 2, 4, 5

†ATOKA FORMATION – ZONE S

Age:

Atokan Series, Pennsylvanian (Merewether, 1967)

Nomenclatorial Assignment(s):

zone s of the Atoka Formation (Merewether, 1967)

Sub-Division(s):

None

Previous Name(s):

Part of the †Lower or Eastern Coal-Bearing Division (Winslow, 1888)

Part of the †Appleton Stage (including †Cross Plains Sandstone, †Russellville Shales, and/or †Washburn Sandstones), †Booneville Stage, and/or †Danville Stage of the †Coal Measures (Winslow *in* Stevenson, 1896). These names were applied to use in the coal fields of Arkansas.

Part of the †Millstone Grit (Branner, 1891; Simonds, 1891; Croneis, 1930a)

Part of the †Winslow Formation (Adams and Ulrich, 1904)

Part of the middle Atoka Formation. The area north of the Arkansas coal fields changed to the †Winslow Formation name, while the southern parts, like this area, in the coal field were known as the Atoka Shale (Collier, 1907; Croneis, 1930a) until the †Winslow Formation was abandoned by Adams and Ulrich (1904) in favor of the Atoka Formation

Tackett Sandstone (a synonymous informal, subsurface name) of the Atoka Formation (Merewether, 1967)

Replaced By:

Part of the middle Atoka Formation (FSGS, 1988). “Zone S” was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

West-central Arkansas (Merewether, 1967)

Type Area:

Not designated. “Zone P” was first used for a subsurface interval (Merewether, 1967), but later was stated to be exposed in the Boston Mountains, northern Arkansas (Merewether and Haley, 1969)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated

Original Reference:

Merewether, E.A., 1967, Geology of Knoxville quadrangle, Johnson and Pope Counties, Arkansas: Arkansas Geological Commission Information Circular, n. 20-E, p. 6, 8, 13-14, pls. 2, 4

†ATOKA FORMATION – ZONE W

Age:

Atokan Series, Pennsylvanian (Haley, 1966)

Nomenclatorial Assignment(s):

zone w of the Atoka Formation (Haley, 1966)

Sub-Division(s):

None

Previous Name(s):

Part of the †Lower or Eastern Coal-Bearing Division (Winslow, 1888)

Part of the †Appleton Stage (including †Cross Plains Sandstone, †Russellville Shales, and/or †Washburn Sandstones), †Booneville Stage, and/or †Danville Stage of the †Coal Measures (Winslow *in* Stevenson, 1896). These names were applied to use in the coal fields of Arkansas

Part of the †Millstone Grit (Branner, 1891; Simonds, 1891; Croneis, 1930a)

Part of the †Winslow Formation (Adams and Ulrich, 1904)

Part of the Atoka Formation. The area north of the Arkansas coal fields changed to the †Winslow Formation name, while the southern parts, like this area, in the coal field were known as the Atoka Shale (Collier, 1907; Croneis, 1930a) until the †Winslow Formation was abandoned by Adams and Ulrich (1904) in favor of the Atoka Formation

Replaced By:

Part of the Atoka Formation. “Zone W” was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

West-central Arkansas (Haley, 1966)

Type Locality:

Logan, Johnson, and Sebastian Counties, Arkansas (Haley, 1966)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated

Original Reference:

Haley, B.R., 1966, Geology of Barber quadrangle, Sebastian County and vicinity, Arkansas: Arkansas Geological Commission Information Circular, n. 20-C, p. 4-7, 17-21, pls. 1, 2, 4, 5

BACHELOR SANDSTONE

Age:

Kinderhookian Series, Mississippian

Nomenclatorial Assignment(s):

Bachelor Formation (Thompson and Fellows, 1969)

Bachelor Member of the St. Joe Formation (Shelby, 1986)

Bachelor Sandstone of the St. Joe Limestone (McGilvery *et al*., 2016)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Limestone / Formation of the †Osage Group (Branner, 1891; Simonds, 1891)

Part of the St. Joe Limestone / Member of the Boone Limestone / Formation of the †Osage Group (Hopkins, 1893)

Part of the St. Joe Limestone / Member of the Boone Limestone / Formation (Adams and Ulrich, 1904)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Not in Use	
Arkansas Geological Survey:	Bachelor (no unit given)	(informal)

Bachelor Formation. Proposed in 2013 (Mazzullo *et al*., 2013). Yet to be used in any publication by the U.S. Geological Survey or the Arkansas Geological Survey

Regional Distribution:

Northwestern Arkansas; Missouri and Oklahoma (McGilvery *et al*., 2016)

Type Locality:

Near Calwood, SE¼ NW¼ SW¼ Sec. 9, T. 48 N., R. 8 W., Callaway County, Missouri (Mehl, 1960)

Type Section:

Not designated

Primary Reference Sections:

Not designated

Origin of Name:

Not stated. Presumably, Bachelor [town], Callaway County, Missouri

Original Reference:

Mehl, M.G., 1960, The relationship of the base of the Mississippian System in Missouri: Denison University Journal of the Scientific Laboratories, v. 45, p. 94-98

†BAIRD MOUNTAIN LIMESTONE MEMBER

Age:

Kinderhookian Series, Mississippian (Luttrell *et al*., 1981)

Nomenclatorial Assignment(s):

Baird Mountain Member / Limestone Member of the Northview Formation (Thompson and Fellows, 1969)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Limestone / Formation of the †Osage Group (Branner, 1891; Simonds, 1891)

Part of the St. Joe Member of the Boone Limestone / Formation of the †Osage Group (Hopkins, 1893)

Part of the St. Joe Limestone of the Boone Limestone / Formation (Adams and Ulrich, 1904)

Replaced By:

This unit has been proposed to be abandoned in 2013 and replaced by the lower part of Pierson Limestone / Formation (Mazzullo *et al*., 2013)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Proposed to be abandoned in 2013 (Mazzullo *et al*., 2013)

Regional Distribution:

Northern Arkansas; Missouri and Oklahoma (Luttrell *et al*., 1981)

Type Locality:

Baird Mountain Quarry, NW¼ SW¼ NW¼ Sec. 26, T. 22 N., R. 22 W., Taney County, Missouri (Thompson and Fellows, 1969)

Type Section:

Baird Mountain Quarry, NW¼ SW¼ NW¼ Sec. 26, T. 22 N., R. 22 W., Taney County, Missouri (Thompson and Fellows, 1969)

Primary Reference Section:

Not designated

Origin of Name:

Baird Mountain Quarry [quarry], Taney County, Missouri (Thompson, 1986)

Original Reference:

Thompson, T.L. and Fellows, L.D., 1969, Stratigraphy and conodont biostratigraphy of Kinderhookian and Osagean (Lower Mississippian) rocks of southwestern Missouri and adjacent areas: Missouri Geological Survey & Water Resources Report of Investigations, n. 45, p. 6, 7, 20-23, 24, 39, 56, 72, 73, 74

BALDWIN CAP ROCK

Age:

Morrowan Series, Pennsylvanian (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Baldwin cap rock of the Dye Shale Member of the Bloyd Formation (Henbest, 1962)

Sub-Division(s):

None

Previous Name(s):

Part of the †Boston Group (Branner, 1891; Simonds, 1891)

Part of the †Morrow Formation (Adams and Ulrich, 1904)

Part of the Bloyd Shale of the †Morrow Group (Purdue, 1907)

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey:

Baldwin cap rock of the Dye Shale Member of the Bloyd Formation (informal)

Regional Distribution:

Northwestern Arkansas (Henbest, 1962)

Type Locality:

Washington County, Arkansas (Henbest, 1962)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Baldwin Station [town of Baldwin], Washington County, Arkansas (Henbest, 1962)

Original Reference:

Henbest, L.G., 1962, New members of the Bloyd Formation of Pennsylvanian age, Washington County, Arkansas, *in* Short papers in geology, hydrology, and topography, articles 120-179: U.S. Geological Survey Professional Paper, n. 450-D, p. D42-D43

BALDWIN COAL

Age:

Morrowan Series, Pennsylvanian (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Baldwin coal of the Bloyd shale (Croneis, 1930a)

Baldwin coal member of the Bloyd formation (Branner, 1940)

Baldwin coal member of the Bloyd shale of the Morrow group (Cooper, 1945)

Baldwin coal of the Woolsey member of the Bloyd shale (Henbest, 1953)

Baldwin coal / coal seam (FSGS, 1959)

Baldwin coal of the Woolsey Member of the Bloyd Formation (Henbest, 1962)

Baldwin Coal bed of the Woolsey Member of the Bloyd Formation (Sutherland and Manger, 1988)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "coal-bearing shale" of the †Boston Group (Branner, 1891; Simonds, 1891)

Part of the unnamed "coal-bearing shale" of the †Morrow Formation (Adams and Ulrich, 1904)

†Zion Chapel coal (Henbest, 1953). This name is synonymous to the Baldwin coal

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey:

Baldwin coal of the Woolsey Member of the Bloyd Formation (informal)

Regional Distribution:

Northwestern Arkansas (Henbest, 1953)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated in original reference. Baldwin Station [town of Baldwin], Washington County, Arkansas (Henbest, 1962)

Original Reference:

Croneis, C., 1930a, Geology of the Arkansas Paleozoic area: Arkansas Geological Survey Bulletin, n. 3, p. 82, 87, 362

Croneis, C., 1930b, A new type of paleontologic table: American Journal of Science, series 5, v. 20, n. 119, p. 339-343

†BATESVILLE ASH BED

Age:

Cincinnatian Series, Late Ordovician

This is an age equivalent to part of the Cason shale (Miser, 1933 *in* Wilmarth, 1938; Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Batesville Ash-bed (Williams, 1891a)

Batesville ash bed (Wilmarth, 1938) (this name was already abandoned in this publication)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

Part of the Cason Shale (Miser, 1933 *in* Wilmarth, 1938)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northern Arkansas (Williams, 1891a)

Type Locality:

Near Cushman, S½ Sec. 8, T. 14 N., R. 7 W., Independence County, Arkansas (Williams, 1891a)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Batesville [town], Independence County, Arkansas (Williams, 1891a)

Original Reference:

Williams, J.F., 1891a, The igneous rocks of Arkansas: Annual Report of the Geological Survey of Arkansas for 1890, v. 2, p. 373-375

BATESVILLE SANDSTONE / FORMATION

Age:

Chesterian Series, Mississippian (Haley *et al*., 1976, revised 1993)

Nomenclatorial Assignment(s):

Batesville sandstone (Branner, 1891; Simonds, 1891)

Batesville formation (Easton, 1942)

Batesville Sandstone of the Mayes Group (Ogren, 1968)

Batesville Sandstone Formation (Burdick and Strimple, 1969)

Sub-Division(s):

Hindsville Limestone Member (Purdue and Miser, 1916)

Previous Name(s):

†Wyman Sandstone. The Wyman Sandstone name was mistakenly applied to the beds of the Batesville Sandstone / Formation by Simonds (1891). Simonds (1891) also mistakenly applied the Batesville Sandstone / Formation name to the beds of the Wedington Sandstone Member of the Fayetteville Shale (Purdue and Miser, 1916)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Batesville Sandstone	(formal)
Arkansas Geological Survey:	Batesville Formation	(formal)
	Batesville Sandstone	(formal)

Regional Distribution:

Northern Arkansas; Missouri and Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Bluff at Ramsey's Ferry, Batesville, Independence County, Arkansas (Williams, 1900)

Type Section:

Not designated

Primary Reference Sections:

1. South flank of Oakleigh Mountain, NW¼ NE¼ Sec. 7, T. 21 N., R. 28 W., Barry County, Missouri (Thompson, 1986)
2. Roadcut on Missouri Highway 90, west of Washburn, center of the north line of Sec. 32, T. 22 N., R. 28 W., Barry County, Missouri (Thompson, 1986). This section was previously described by Thompson (1972)

Origin of Name:

Batesville [town], Independence County, Arkansas (McFarland, 1998, revised 2004). Name credited to Branner (1891)

Original Reference:

Branner, J.C., 1891, Introduction: Arkansas Geological Survey Annual Report 1888, v. 4, p. xiii

Simonds, F.W., 1891, The geology of Washington County: Arkansas Geological Survey Annual Report 1888, v. 4, p. 26, 49-53

†BELVA SHALE

Age:

Desmoinesian Series, Pennsylvanian

This is an age equivalent to part of the McAlester and/or Savanna Formations (Wilmarth, 1938; Keroher *et al*., 1966; Collier, 1907; Hendricks and Parks, 1950; Merewether, 1967)

Nomenclatorial Assignment(s):

Belva shale of the Sebastian Stage of the Coal Measures (Winslow, 1896)

Sub-Division(s):

None

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Winslow, 1888; Collier, 1907)

Replaced By:

Part of the †Fort Smith Formation (Wilmarth, 1938)

Part of the McAlester Formation and/or Savanna Formation (Hendricks and Parks, 1950)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

West-central Arkansas (Winslow, 1896; Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Belva [town], Scott County, Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Original Reference:

Winslow, A.H., *in* Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 51

BENTONVILLE FORMATION

Age:

Osagean Series, Mississippian (Mazzullo *et al*., 2013)

Nomenclatorial Assignment(s):

Bentonville Formation of the Boone Group (Mazzullo *et al*., 2013)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Limestone / Formation of the †Osage Group (Branner, 1891; Simonds, 1891)

Part of the Boone Limestone / Formation (the interval informally called the "undifferentiated Burlington-Keokuk") (Mazzullo *et al*., 2013)

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Bentonville Formation. Proposed in 2013 (Mazzullo *et al*., 2013). As of yet, this name has not been published in any U.S. Geological Survey or Arkansas Geological Survey publications

Regional Distribution:

Northwestern Arkansas; Missouri and Oklahoma (Mazzullo *et al*., 2013)

Type Area:

Benton and Boone Counties, Arkansas (Mazzullo *et al*., 2013)

Type Section (Composite):

1. Upper and middle section on east side of roadcut on U.S. Highway 71 / U.S. Highway 540 in NE¼ NW¼ Sec. 18, T. 20 N., R. 30 W., Benton County, Arkansas (Mazzullo *et al*., 2013)
2. Lower section on east side of roadcut on U.S. Highway 65 in SW¼ SE¼ SE¼ Sec. 8, T. 20 N., R. 21 W., Boone County, Arkansas (Mazzullo *et al*., 2013)

Primary Reference Section:

Not designated. Multiple other measured sections are described by Mazzullo *et al*. (2013), however, none have been designated a primary reference section

Origin of Name:

Not stated. Presumably, Bentonville [town], Benton County, Arkansas

Original Reference:

Mazzullo, S.J., Boardman, D.R., Wilhite, B.W., Godwin, C., Morris, B.T., 2013, Revisions of outcrop lithostratigraphic nomenclature in the lower to middle Mississippian subsystem (Kinderhookian to basal Meramecian Series) along the shelf-edge in southwest Missouri, northwest Arkansas, and northeast Oklahoma: Oklahoma City Geological Society Shale Shaker, v. 63, n. 6, p. 414-454

BIGFORK CHERT / FORMATION

Age:

Mohawkian to Cincinnatian Series, Ordovician (Krueger, 2002; Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Bigfork chert (Purdue, 1909a)

Big Fork chert (Purdue, 1909b)

Big Fork limestone (Ulrich, 1911)

Bigfork formation (Ham, 1959)

Bigfork chert formation (Sterling and Stone, 1961)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed “shales, limestones, massive quartzose sandstones, cherty blue limestones, with gray, black, and yellow shales at the bottom” (Griswold, 1892)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Bigfork Chert	(formal)
Arkansas Geological Survey:	Bigfork Chert	(formal)
	Bigfork Formation	(formal)

Regional Distribution:

West-central Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Big Fork Post Office, Montgomery County, Arkansas (Purdue, 1909a)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Big Fork [town], Montgomery County, Arkansas (Purdue, 1909a)

Original Reference:

Purdue, A.H., 1909a, Slates of Arkansas: Geological Survey of Arkansas, p. 30, 35

Purdue, A.H., 1909b, Structure and stratigraphy of the Ouachita Ordovician area, Arkansas, (abstract): Geological Society of America Bulletin, v. 19, p. 556-557

BLACK LEDGE CHERT

Age:

Ibexian Series, Ordovician

This is an age equivalent to the Powell Dolomite (Chandler *et al*., 2011; Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Black Ledge of the Powell Dolomite (McKnight, 1935)

Black Ledge of the Powell Formation of the Yellville Group (Hedden, 1976)

Black Ledge Chert of the Powell Dolomite (Chandler *et al*., 2011)

Sub-Division(s):

None

Previous Name(s):

Part of the †Calciferous Formation (Penrose, 1891)

Part of unnamed "magnesian limestone, sandstone, cherts, etc." (Hopkins, 1893)

Part of the †Yellville Limestone (Adams and Ulrich, 1904)

Part of the Powell Limestone / Dolomite (Purdue and Miser, 1916)

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Black Ledge Chert of the Powell Dolomite (informal)

Regional Distribution:

Northern Arkansas (Wilmarth, 1938)

Type Area:

In quadrangle area of Yellville, Marion County, Arkansas (McKnight, 1935)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Informal term use by ore prospectors "in allusion to the fact that it generally weathers dark" (McKnight, 1935)

Original Reference:

McKnight, E.T., 1935, Zinc and lead deposits of northern Arkansas: U.S. Geological Survey Bulletin, n. 853, p. 23, 132, 133-134, 237, 266, 268-271, 275, 279, 282, 283

†BLACK ROCK LIMESTONE MEMBER

Age:

Ibexian Series, Ordovician (Landing and Westrop, 2006)

Nomenclatorial Assignment(s):

Black Rock limestone (Miser and Stone, 1929)

Black Rock formation (McKnight, 1935)

Blackrock formation (Derby, 1973). This is a typo

Black Rock Limestone Member of the Smithville Formation (Wise *et al*., 1975)

Black Rock Lithosome of the Powell Formation of the Yellville Group (Hedden, 1976)

Black Rock Limestone Member of the Powell Formation (Hedden, 1980)

Black Rock Member of the Smithville Formation (Landing and Westrop, 2006)

Sub-Division(s):

None

Previous Name(s):

Part of the †Calciferous Formation (Penrose, 1891)

Part of the unnamed "magnesium, limestone, sandstone, cherts, etc." (Hopkins, 1893)

Part of the †Yellville Formation (Adams and Ulrich, 1904)

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northern Arkansas (Keroher *et al*., 1966)

Type Locality:

Not stated. Presumably, near Black Rock, Lawrence County, Arkansas

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated in original reference. Black Rock [town], Lawrence County, Arkansas (Wise *et al*., 1975). Name credited to E.O. Ulrich in unpublished notes (McKnight, 1935)

Original Reference:

Miser, H.D. and Stone, G.W. (eds.), 1929, Geologic map of Arkansas: Arkansas Geological Survey, map, scale 1:500,000

†BLACKJACK KNOB MEMBER

Age:

Ibexian Series, Ordovician (Thompson, 2001)

Nomenclatorial Assignment(s):

Blackjack Knob member of the Theodosia formation of the Jefferson City group (Cullison, 1944)

Blackjack Knob Member of the Cotter Dolostone of the Yellville Group (Hedden, 1976)

Sub-Division(s):

†Gainesville Sandstone (Cullison, 1944)

Previous Name(s):

Part of the †Calciferous Formation (Penrose, 1891)

Part of the unnamed "magnesian limestone, sandstone, cherts, etc." (Hopkins, 1893)

Part of the †Yellville Limestone (Adams and Ulrich, 1904)

Part of the Cotter Dolomite / Formation (Purdue and Miser, 1916)

Replaced By:

Part of the Cotter Dolomite / Formation. Blackjack Knob Member was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas; Missouri (Cullison, 1944)

Type Locality:

On the north side of Blackjack Knob, Sections 9 and 16, T. 22 N., R. 17 W., Taney County, Missouri (Cullison, 1944)

Type Section:

On the north side of Blackjack Knob, Sections 9 and 16, T. 22 N., R. 17 W., Taney County, Missouri (Cullison, 1944)

Primary Reference Section:

Not designated

Origin of Name:

Blackjack Knob [topographic feature], Taney County, Missouri (Cullison, 1944)

Original Reference:

Cullison, J.S., 1944, The stratigraphy of some Lower Ordovician formations of the Ozark uplift: University of Missouri School of Mines and Metallurgy Bulletin, Technical Series, v. 15, n. 2, p. 25, 27, 31

BLAKELY SANDSTONE / FORMATION

Age:

Whiterockian Series, Ordovician (Krueger, 2002; Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Blakely sandstone (Purdue *in* Ulrich, 1911)

Blakeley sandstone (Branner, 1927). This is a typo

Blakely formation (Decker, 1959; Goldstein, 1959)

Blakely sandstone formation (Pitt *et al*., 1961)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "shales, limestones, massive quartzose sandstones, cherty blue limestones, with gray, black, and yellow shales at the bottom" (Griswold, 1892)

Part of the †Caddo Shale (Purdue, 1909b)

Part of the †Ouachita Shale (Purdue, 1909a)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Blakely Sandstone	(formal)
Arkansas Geological Survey:	Blakely Sandstone	(formal)
	Blakely Formation	(formal, but rarely used)

Regional Distribution:

West-central Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Blakely Mountain, Garland County, Arkansas (Ulrich, 1911)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Blakely Mountain [topographic feature], Garland County, Arkansas (Miser, 1918). Name credited to Purdue in letter (Ulrich, 1911)

Original Reference:

Ulrich, E.O., 1911, Revision of the Paleozoic systems: Geological Society of America Bulletin, v. 22, p. 677

BLAYLOCK SANDSTONE / FORMATION

Age:

Niagaran Series, Silurian (Jusczuk, 2002; Cramer *et al*., 2010)

Nomenclatorial Assignment(s):

Blaylock sandstone (Purdue, 1909b)

Blaylock sandstone formation (Holbrook, 1947)

Blaylock formation (Ham, 1959; Goldstein, 1959)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "shales, limestones, massive quartzose sandstones, cherty blue limestones, with gray, black, and yellow shales at the bottom" (Griswold, 1892)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Blaylock Sandstone	(formal)
Arkansas Geological Survey:	Blaylock Formation	(formal)

Blaylock Sandstone (formal)

Regional Distribution:

West-central Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Blaylock Mountain, Montgomery County, Arkansas (Purdue, 1909a)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Blaylock Mountain [topographic feature], Montgomery County, Arkansas (Purdue, 1909a)

Original Reference:

Purdue, A.H., 1909a, Slates of Arkansas: Geological Survey of Arkansas, p. 30, 36

Purdue, A.H., 1909b, Structure and stratigraphy of the Ouachita Ordovician area, Arkansas, (abstract): Geological Society of America Bulletin, v. 19, p. 556-557

BLOYD FORMATION / SHALE

Age:

Morrowan Series, Pennsylvanian (Haley *et al*., 1976, revised 1993; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Bloyd shale / Bloyd formation (Purdue, 1907b)

Bloyd shale of the Morrow group (Miser and Stone, 1929)

Sub-Division(s):

Baldwin caprock of the Dye Member / Shale Member (Henbest, 1962)

Baldwin coal of the Woolsey Member (Croneis, 1930a; 1930b)

Brentwood Limestone Member (Adams and Ulrich, 1904)

†Delaney Sandstone Member of the †Winslow Formation (Glenn, 1973)

Dye Member / Shale Member (Henbest, 1962)

†Gaither Sandstone Member (Crowder, 1982)

†Gaither Mountain Sandstone Member (Teas, 2002)

Kessler Limestone Member (Branner, 1891; Simonds, 1891)

†middle Bloyd sandstone (Zachry and Haley, 1975)

Parthenon Sandstone (Chandler and Zachry, 2010)

Trace Creek Member / Shale Member (Henbest, 1962)

Woolsey Member (Henbest, 1953)

Previous Name(s):

Part of the †Boston Group (Branner, 1891; Simonds, 1891)

Part of the †Morrow Formation (Adams and Ulrich, 1904)

Replaced By:

None. Except in the eastern regions of the Ozarks, where it is undifferentiated with the underlying Hale Formation. This has been named the Witts Springs Formation (Glick *et al*., 1964)

Formal Designation:

U.S. Geological Survey:	Bloyd Formation	(formal)
	Bloyd Shale	(formal)
Arkansas Geological Survey:	Bloyd Formation	(formal)
	Bloyd Shale	(formal, but old term)

Regional Distribution:

Northern Arkansas (Sutherland and Henry, 1977)

Type Locality:

Bloyd Mountain, Washington County, Arkansas (Henbest, 1953)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Bloyd Mountain [topographic feature], Washington County, Arkansas (Purdue, 1907b)

Original Reference:

Purdue, A.H., 1907b, Description of the Winslow quadrangle: U.S. Geological Survey Geologic Atlas of the United States, Winslow folio, Arkansas-Indian Territory, n. 154, p. 2, 3

BOGGY FORMATION

Age:

Desmoinesian Series, Pennsylvanian (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Boggy shale (Hendricks and Parks, 1950)

Boggy formation (Reinemund and Danilchik, 1957)

Boggy formation of the Krebs group (Haley, 1961)

Sub-Division(s):

None

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Winslow, 1888; Collier, 1907)

†Poteau Stage of the †Coal Measures (including †Poteau Shale) and the upper part of the †Sebastian Stage of the †Coal Measures (including the †Greenwood Sandstone and possibly the †Tomlinson Shale) (Winslow *in* Stevenson, 1896)

Savanna Formation (as defined by Collier (1907)) and the upper part of the †Paris Shale (Hendricks and Parks, 1950)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Boggy Formation	(formal)
Arkansas Geological Survey:	Boggy Formation	(formal)

Regional Distribution:

West-central Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Area:

McAlester quadrangle area, Oklahoma (Taff, 1899)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, North Boggy Creek [creek] or another nearby creek, Pittsburg and Atoka Counties, Oklahoma (Taff, 1899; Morgan, 1927)

Original Reference:

Taff, J.A., 1899, Geology of the McAlester-Lehigh coal field, Indian Territory, *in* Nineteenth annual report of the United States Geological Survey, part 3, Economic geology: U.S. Geological Survey Annual Report, p. 438-439

BOONE LIMESTONE / FORMATION

Age:

Kinderhookian to Osagean Series, Mississippian (Chandler, 2013)

Osagean to Meramecian Series, Mississippian (Mazzullo *et al*., 2013)

Nomenclatorial Assignment(s):

Boone chert and limestone / chert and cherty limestone (Branner, 1891; Simonds, 1891)

Boone limestone and chert / formation / chert / limestone / flint (Adams and Ulrich, 1904)

Boone Group (Mazzullo *et al*., 2013)

Sub-Division(s):

Boone Limestone / Formation:

†Reeds Spring Member (Cline, 1934)

Short Creek Oolite Member (Branner, 1927)

St. Joe Limestone Member (Hopkins, 1893)

Boone Group:

Bentonville Formation (Mazzullo *et al*., 2013)

Buffalo River tripolite facies of the Reeds Spring Formation (Mazullo *et al*., 2013)

Pineville tripolite facies of the Reeds Spring Formation (Mazullo *et al*., 2011; 2013)

Reeds Spring Formation (Mazullo *et al*., 2013)

Ritchey Formation (Mazzullo *et al*., 2013)

Short Creek Member of the Bentonville Formation (Mazzullo *et al*., 2013)

White River tripolite facies of the Reeds Spring Formation (Mazullo *et al*., 2013)

Previous Name(s):

†Carrollton Limestone (Williams, 1900). Used for the upper beds of the Boone Limestone / Formation

Replaced By:

†Osage Group (Cline, 1934). This name was proposed to replace the Boone Limestone / Formation, but it was discarded

Formal Designation:

U.S. Geological Survey:	Boone Formation	(formal)
Arkansas Geological Survey:	Boone Formation	(formal)
	Boone Limestone	(formal)

Boone Group. Proposed in 2013. As of yet, this name has not been published in any U.S. Geological Survey or Arkansas Geological Survey publications.

Regional Distribution:

Northern Arkansas; Missouri and Oklahoma (McFarland, 1998, revised 2004)

Type Area:

Boone County, Arkansas (Simonds, 1891)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Boone County, Arkansas (Simonds, 1891; Croneis, 1930). Name credited to Branner (1891)

Original Reference:

Branner, J.C., 1891, Introduction: Arkansas Geological Survey Annual Report 1888, v. 4, p. xiii

Simonds, F.W., 1891, The geology of Washington County: Arkansas Geological Survey Annual Report 1888, v. 4, p. 27-37

†BOONEVILLE STAGE

Age:

Atokan Series, Pennsylvanian (Wilmarth, 1938; Keroher *et al.*, 1966; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Booneville Stage of the Coal Measures (Winslow, 1896)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "sandstones and shales" (Griswold, 1892)

Part of the †Lower or Eastern Coal Bearing Division (Winslow, 1888)

Replaced By:

Upper part of the Atoka Formation (Wilmarth, 1938). The area north of the Arkansas coal fields changed to the †Winslow Formation name, while the southern parts, like this area, in the coal field were known as the Atoka Shale (Collier, 1907; Croneis, 1930a) until the †Winslow Formation was abandoned by Adams and Ulrich (1904) in favor of the Atoka Formation

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas; Oklahoma (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Booneville [town], Logan County, Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Original Reference:

Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 51

†BOSTON GROUP

Age:

Chesterian to Morrowan Series, Pennsylvanian

This is an age equivalent to the Fayetteville Shale, Pitkin Limestone/ Formation, Hale Formation, and Bloyd Shale (Branner, 1891; Simonds, 1891; Adams and Ulrich, 1904; Purdue, 1907b; Haley *et al*., 1976, revised 1993)

Nomenclatorial Assignment(s):

Boston group (Branner, 1891)

Sub-Division(s):

†Archimedes Limestone (Owen, 1858; Branner, 1891)

Kessler Limestone Member (Branner, 1891)

†Marshall Shale (Branner, 1891)

†Pentremital Limestone (Branner, 1891)

†Washington Shale and Sandstone (Branner, 1891)

Previous Name(s):

†Genevieve Group (Williams, 1891b). This name is synonymous to the Boston Group

Replaced By:

None. This group name was abandoned and its member names either continued or were replaced.

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas; Oklahoma (Wilmarth, 1938)

Type Area:

Boston Mountains, northwestern Arkansas (Branner, 1891)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Boston Mountains [topographic feature], Washington County, Arkansas (Wilmarth, 1938)

Original Reference:

Branner, J.C., 1891, Introduction: Arkansas Geological Survey Annual Report 1888, v. 4, p. xiii

BRASSFIELD LIMESTONE

Age:

Niagaran Series, Silurian (Cramer *et al*., 2010; Turner and Hudson, 2010)

Nomenclatorial Assignment(s):

Brassfield limestone (Ulrich, 1911)

Sub-Division(s):

None

Previous Name(s):

Part of the St. Clair Limestone (Penrose, 1891; Croneis, 1930a)

Replaced By:

None. However, some consider this a member of the Cason Shale (McFarland, 1998, revised 2004)

Formal Designation:

U.S. Geological Survey:	Brassfield Limestone	(formal)
Arkansas Geological Survey:	Brassfield Limestone	(formal)

Regional Distribution:

Central-northern Arkansas; Kentucky, Indiana, Ohio, and Tennessee (McFarland, 1998, revised 2004)

Type Locality:

Along the Louisville and Atlantic Railroad, between Brassfield and Panola, Madison County, Kentucky (Foerste, 1906)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Brassfield [town], Madison County, Kentucky (McFarland, 1998, revised 2004)

Original Reference:

Foerste, A.F., 1906, The Silurian, Devonian and Irvine formations of east-central Kentucky: Kentucky Geological Survey Bulletin, n. 7, p. 10, 12, 27-35, 114, 217, 286, 290, 312

BRENTWOOD LIMESTONE MEMBER

Age:

Morrowan Series, Pennsylvanian (Fort Smith Geological Society, 1988)

Nomenclatorial Assignment(s):

Brentwood limestone of the Morrow formation (Adams and Ulrich, 1904)

Brentwood limestone lentil of the Morrow formation (Adams and Ulrich, 1905)

Brentwood limestone lentil of the Bloyd shale of the Morrow group (Purdue, 1907b)

Brentwood limestone member of the Bloyd shale of the Morrow group (Purdue and Miser, 1916)

Brentwood Limestone Member of the Bloyd Shale (Branner, 1927)

Brentwood limestone member of the Bloyd formation of the Morrow group (Giles and Brewster, 1930)

Brentwood limestone member of the Bloyd formation (Diggs, 1951)

Sub-Division(s):

None

Previous Name(s):

†Pentremital Limestone (Owen, 1860; Adams and Ulrich, 1904)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:

Brentwood Limestone Member of the Bloyd Formation	(formal)
Brentwood Limestone Member of the Bloyd Shale	(formal)

Arkansas Geological Survey:

Brentwood Limestone Member of the Bloyd Formation	(formal)

Regional Distribution:

Northwestern Arkansas; Oklahoma (Keroher *et al*., 1966)

Type Area:

Northwestern Arkansas (Adams and Ulrich, 1904)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated in original reference. Brentwood [town], Washington County, Arkansas (Purdue and Miser, 1916, p. 15)

Original Reference:

Adams, G.I. and Ulrich, E.O., 1904, Zinc and lead deposits of northern Arkansas: U.S. Geological Survey Professional Paper, n. 24, p. 28, 109

†*BRUSHY KNOB FORMATION

Age:

Morrowan Series, Pennsylvanian

This is an age equivalent to part of the Jackfork Sandstone (Morris, 1965; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Brushy Knob Formation of the Jackfork Group (Morris, 1965)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "sandstones and shales" (Griswold, 1892)

Part of the upper Jackfork Sandstone (Purdue, 1909a)

†Brushy Knob Formation of the Jackfork Group (Walthall, 1967). This name was abandoned in favor of formation names from Oklahoma: †Wildhorse Mountain, †Prairie Mountain, †Markham Mill, †Wesley, and †Game Refuge

†Wildhorse Mountain, †Prairie Mountain, †Markham Mill, †Wesley, and †Game Refuge Formations of the Jackfork Group (Morris, 1971). These names were abandoned in favor of the †Brushy Knob Formation of the Jackfork Group

Replaced By:

†Wildhorse Mountain, †Prairie Mountain, †Markham Mill, †Wesley, and †Game Refuge Formations of the Jackfork Group (Walthall, 1967). These names were extended from Oklahoma and proposed to replace the †Brushy Knob Formation

†Brushy Knob Formation of the Jackfork Group (Morris, 1971). This name was reinstated and replaced the †Wildhorse Mountain, †Prairie Mountain, †Markham Mill, †Wesley, and †Game Refuge Formations of the Jackfork Group of Walthall (1967)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use (uncertain)*

*Coleman *et al*. (1994) used the "Brushy Knob Formation" in Guidebook 94-2

Regional Distribution:

Central and southwestern Arkansas (Morris, 1971)

Type Locality:

On U.S. Forest Service Road 216, from NE¼ NE¼, Sec. 23, T. 1 S., R. 28 W., to near the "T" in the road at NW¼ SE¼ Sec. 14, R. 1 S., R. 28 W. Approximately 500 feet of the top is thought to be faulted, but can be correlated with exposures along the banks of Tan-a-hill Creek at Y City, from SW¼ Sec. 22, T. 1 N., R. 29 W., to near NW¼ Sec. 22, T. 1 N., R. 29 W., Scott County, Arkansas (Morris, 1965, 1971)

Type Section:

Not designated

Primary Reference Sections:

1. Mill Creek Mountain, T. 1 N., R. 27, 28, 29 W., Franklin County, Arkansas (Morris, 1965)
2. Near Forked Mountain, with the base in SW¼ Sec. 33, T. 3 N., R. 19 W., Perry County, Arkansas (Morris, 1965)

Origin of Name:

Not stated. Presumably, Brushy Knob [topographic feature], Polk County, Arkansas

Original Reference:

Morris, R.C., 1965, Geologic investigation of Jackfork Group of Arkansas: unpublished Ph.D. dissertation, University of Wisconsin, Madison, Wisconsin, p. 10, 11, 13, 14, 16-17, 18, 20, 22, 24-30, 41, 45, 47, 51, 53, 62, 63, 65, 71, 72, 75, 81, 82, 84, 90, 94, 96, 98, 100, 102, 104, 110, 133-135, 138-143, 172-176

BUFFALO RIVER TRIPOLITE FACIES

Age:

Osagean Series, Mississippian (Mazzullo *et al*., 2013)

Nomenclatorial Assignment(s):

Buffalo River tripolite facies of the Reeds Spring Formation of the Boone Group (Mazzullo *et al*., 2013)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Limestone / Formation of the †Osage Group (Branner, 1891; Simonds, 1891)

Part of the Boone Limestone / Formation (Adams and Ulrich, 1904)

Part of the Reeds Spring Formation of the Boone Limestone / Formation (Cline, 1934). This name was used at times afterwards, but was discarded in favor of Adams' and Ulrich's (1904) name

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Buffalo River tripolite facies of the Reeds Spring Formation of the Boone Group. Proposed in 2013 (Mazzullo *et al*., 2013). As of yet, this name has not been published in any U.S. Geological Survey or Arkansas Geological Survey publications

Regional Distribution:

Northwestern Arkansas (Mazzullo *et al*., 2013)

Type Locality:

About 1 mile southeast of Duff where U.S. Highway 65 crosses the Buffalo River in SW¼ Sec. 36, T. 16 N., R. 17 W., Searcy County, Arkansas (Mazzullo *et al*., 2013)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Buffalo River [river], Searcy County, Arkansas (Mazzullo *et al*., 2013)

Original Reference:

Mazzullo, S.J., Boardman, D.R., Wilhite, B.W., Godwin, C., Morris, B.T., 2013, Revisions of outcrop lithostratigraphic nomenclature in the lower to middle Mississippian subsystem (Kinderhookian to basal Meramecian Series) along the shelf-edge in southwest Missouri, northwest Arkansas, and northeast Oklahoma: Oklahoma City Geological Society Shale Shaker, v. 63, n. 6, p. 414-454

†BULL SHOALS MEMBER

Age:

Ibexian Series, Ordovician (Thompson, 2001)

Nomenclatorial Assignment(s):

Bull Shoals Member of the Cotter Dolostone (Hedden, 1976)

Sub-Division(s):

None

Previous Name(s):

Part of the †Calciferous Formation (Penrose, 1891)

Part of the unnamed "magnesian limestone, sandstone, cherts, etc" (Hopkins, 1893)

Part of the †Yellville Limestone (Adams and Ulrich, 1904)

Part of the Powell Dolomite (Purdue and Miser, 1916)

†Bull Shoals Mountain Chert (Cullison, 1944)

Replaced By:

Uncertain if this bed is recognized as part of the Cotter Formation or if it has returned to the Powell Dolomite

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas (Hedden, 1976)

Type Locality:

Bull Shoals Mountain, Marion County, Arkansas (Hedden, 1976)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Bull Shoals Mountain, Marion County, Arkansas (Hedden, 1976)

Original Reference:

Hedden, W.J., 1976, The stratigraphy and tectno-depositional history of the Smithville and Black Rock lithosomes (Canadian) of northeastern Arkansas with revisions of upper Canadian

stratigraphy in the Ozarks: unpublished Ph.D. dissertation, University of Missouri-Rolla, Rolla, Missouri, 462 p

†BULL SHOALS MOUNTAIN CHERT

Age:

Ibexian Series, Ordovician (Thompson, 2001)

Nomenclatorial Assignment(s):

Bull Shoals Mountain chert of the Powell dolomite (Cullison, 1944)

Sub-Division(s):

None

Previous Name(s):

Part of the †Calciferous Formation (Penrose, 1891)

Part of the unnamed "magnesian limestone, sandstone, cherts, etc" (Hopkins, 1893)

Part of the †Yellville Limestone (Adams and Ulrich, 1904)

Part of the Powell Formation (Purdue and Miser, 1916)

Replaced By:

†Bull Shoals Member (Hedden, 1976)

Uncertain if this bed is recognized as part of the Cotter Formation or if it has returned to the Powell Dolomite

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas (Cullison, 1944)

Type Locality:

Bull Shoals Mountain, SE¼ Sec. 19, T. 20 N., R. 15 W., Marion County, Arkansas (Cullison, 1944)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Bull Shoals Mountain, Marion County, Arkansas (Cullison, 1944)

Original Reference:

Cullison, J.S., 1944, The stratigraphy of some Lower Ordovician formations of the Ozark uplift: University of Missouri School of Mines and Metallurgy Bulletin, Technical Series, v. 15, n. 2, p. 39, 40, 42, 43

†BURLINGTON FORMATION

Age:

Osagean Series, Mississippian (Cline, 1934)

Nomenclatorial Assignment(s):

Burlington limestone (Keyes, 1892)

Burlington formation (Cline, 1934)

Burlington limestone of the Boone limestone (Giles, 1935)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Limestone / Formation of the †Osage Group (Branner, 1891; Simonds, 1891)

Part of the Boone Limestone / Formation (Adams and Ulrich, 1904)

Part of the Reeds Spring Formation and Burlington Formation of Cline (1934) (Giles, 1935)

Part of the Burlington Formation, Keokuk Limestone, Short Creek Oolite, and Warsaw Limestone of Giles (1935) (Thompson and Fellows, 1969)

Replaced By:

Part of the Boone Limestone / Formation. In Arkansas, this interval is informally called the "undifferentiated Burlington-Keokuk Limestone" (Thompson and Fellows, 1969)

Bentonville Formation (Mazzullo *et al*., 2013)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas; Iowa, Illinois, Kentucky, Missouri (Keroher *et al*., 1966), and Oklahoma (Cline, 1934)

Type Locality:

Burlington, Des Moines County, Iowa (Owen, 1852)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Burlington [town], Des Moines County, Iowa (Owen, 1852)

Original Reference:

Owen, D.D., 1852, Report of a geological survey of Wisconsin, Iowa, and Minnesota; and incidentally of a portion of Nebraska Territory: Lippincott, Grambo, and Co., Philadelphia, p. 90-140

†CADDO SHALE

Age:

Whiterockian to Mohawkian Series, Ordovician

This is an age equivalent to the Mazarn Shale, Blakely Sandstone / Formation, and Womble Shale / Formation (Purdue, 1909a; Miser, 1918; Krueger, 2002; Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Caddo shale (Purdue, 1909b)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "shales, limestones, massive quartzose sandstones, cherty blue limestones, with gray, black, and yellow shales at the bottom" (Griswold, 1892)

Replaced By:

†Ouachita Shale and †Stringtown Shale (Purdue, 1909a)

†Ouachita Shale, Blakely Sandstone, and †Stringtown Shale (Ulrich, 1911)

Mazarn Shale, Blakely Sandstone / Formation, and Womble Shale / Formation (Miser, 1918)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Southwestern Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Type Area:

Ouachita Mountains in west-central Arkansas (Purdue, 1909b)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Caddo Gap [town], Montgomery County, Arkansas; or Caddo River [river], Arkansas

Original Reference:

Purdue, A.H., 1909b, Structure and stratigraphy of the Ouachita Ordovician area, Arkansas, (abstract): Geological Society of America Bulletin, v. 19, p. 556-557

†CADDO GAP NOVACULITE

Age:

Kinderhookian Series, Mississippian (Cooper, 1933)

This is an age partially equivalent to the upper division of the Arkansas Novaculite (Jusczuk, 2002)

Nomenclatorial Assignment(s):

Caddo Gap novaculite (Cooper, 1933). Uncertain if a member of the Arkansas Novaculite or a separate formation as no stratigraphic rank is given

Sub-Division(s):

None

Previous Name(s):

Part of the "novaculite" and "novaculites" (Schoolcraft, 1819; Griswold, 1892)

Mississippian part of the upper Arkansas Novaculite (Purdue, 1909a; Cooper, 1933)

Replaced By:

Part of the Arkansas Novaculite. "Caddo Gap Novaculite" was discarded

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Southwestern Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Roadcut on Arkansas Highway 8/Arkansas Highway 27 at Caddo Gap, Montgomery County, Arkansas (Cooper, 1933)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Caddo Gap [town], Montgomery County, Arkansas (Cooper, 1933)

Original Reference:

Cooper, C.L., 1933, Conodonts from the upper and middle Arkansas novaculite at Caddo Gap, Arkansas (abstract) *in* Proceedings of the twenty-fourth annual meeting of The Paleontological

Society, held at Cambridge, Massachusetts, December 28, 29, and 30, 1932: Geological Society of America Bulletin, v. 44, n. 1, p. 211

†CALCIFEROUS FORMATION

Age:

Ibexian to Whiterockian Series, Ordovician

This is an age equivalent to the Jefferson City Dolomite / Formation, Cotter Dolomite / Formation, Powell Dolomite Formation, Everton Formation and St. Peter Sandstone (Penrose, 1891; Adams and Ulrich, 1904; Purdue and Miser, 1916; Ethington *et al*., 2012; Pickell, 2012)

Nomenclatorial Assignment(s):

Calciferous formation / series (Penrose, 1891)

Calciferous sandstone series / terrane / group / limestone (Hopkins, 1893)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

†Yellville Limestone and †Key Sandstone (Adams and Ulrich, 1904)

Cotter Dolomite (Purdue and Miser, 1915; Giles, 1930), Powell Limestone (including the Black Ledge) (Purdue and Miser, 1915; Giles, 1930, McKnight, 1935), Smithville Limestone (Miser and Stone, 1929), †Black Rock Limestone (Miser and Stone, 1929), Everton

Formation (including the Sneeds Limestone Lentil / Dolomite Member, †Member A, Kings River Sandstone Member, Calico Rock Sandstone Member, †Member B, †Member B', †Member B", Newton Sandstone Member, and †Member C) (Purdue, 1907a; Purdue and Miser, 1916; Miser and Stone, 1929; Giles, 1930; McKnight, 1935; Suhm, 1970a, 1970b, 1974), and St. Peter Sandstone (Taff, 1906)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northern Arkansas; Illinois, Iowa, Missouri, and Wisconsin have similar magnesian limestone beds of the Calciferous Formation (Hopkins, 1893), while Canada, New York, Ohio, Pennsylvania, Texas, Vermont, Virginia, and Wyoming have all used the "Calciferous" name (Weeks, 1902)

Type Area:

New York State (Eaton, 1824)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of name:

Mineralogic composition descriptor of the beds (Eaton, 1824)

Original Reference:

Eaton, A., 1824, A geological and agricultural survey of the district adjoining the Erie Canal, in the state of New York, part 1: Packard and Van Benthuysen, Albany, p. 12, 15, 16, 24, 32-33, 107, 110, 122, 128, 130, 134, 135, 143, 149

CALICO ROCK SANDSTONE MEMBER

Age:

Whiterockian Series, Ordovician

This is an age equivalent to a part of the Everton Formation (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Calico Rock sandstone member of the Everton limestone (Miser and Stone, 1929)

Calico Rock sandstone of the Everton formation (Giles, 1930)

Sub-Division(s):

None

Previous Name(s):

Part of the Everton Formation (Taff, 1906)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:

Calico Rock Sandstone Member of the Everton Formation (formal)

Arkansas Geological Survey:

Calico Rock Sandstone Member of the Everton Formation (formal)

Regional Distribution:

Central-northern Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Near Calico Rock, on White River, Izard County, Arkansas (Giles, 1930)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Calico Rock [town], Izard County, Arkansas (Giles, 1930)

Original Reference:

Miser, H.D. and Stone, G.W. (eds.), 1929, Geologic map of Arkansas: Arkansas Geological Survey, map, scale 1:500,000

CANE HILL MEMBER

Age:

Morrowan Series, Pennsylvanian (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Cane Hill member of the Hale formation of the Morrow group (Henbest, 1953)

Cane Hill Member of the Hale Formation (Ballard, 1957)

Cane Hill Formation (Glick *et al*., 1964)

Sub-Division(s):

None

Previous Name(s):

Part of the lower †Washington Shale and Sandstone (Branner, 1891; Simonds, 1891; Henbest, 1962)

Part of the lower Hale Formation (Adams and Ulrich, 1905; Henbest, 1962)

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Cane Hill Member of the Hale Formation (formal)

Arkansas Geological Survey: Cane Hill Member of the Hale Formation (formal)

Regional Distribution:

Northwestern Arkansas; Oklahoma (Keroher *et al*., 1966)

Type Locality:

Along Arkansas Highway 59, 3 miles south of Evansville, Arkansas in SE¼ Sec. 35, T. 13 N., R. 33 W., Washington County, Arkansas (Henbest, 1953)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Cane Hill [town], Washington County, Arkansas (Henbest, 1953)

Original Reference:

Henbest, L.G., 1953, Morrow group and lower Atoka formation of Arkansas: American Association of Petroleum Geologists Bulletin, v. 37, n. 8, p. 1935-1953

†*CANEY SHALE

Age:

Morrowan Series, Pennsylvanian

Nomenclatorial Assignment(s):

Caney shale (Miser and Stone, 1929)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed “sandstones and shales” (Griswold, 1892)

Replaced By:

Pennsylvanian part of Caney Shale renamed to Johns Valley Shale / Formation (Ulrich, 1927)

Johns Valley Shale / Formation. The Caney Shale of Arkansas was considered to be erratic boulders within the Johns Valley Shale / Formation (Reinemund and Danilchik, 1957; Haley *et al*., 1976, revised 1993)

Formal Designation:

U.S. Geological Survey: Caney Shale (uncertain)*

*The U.S. Geological Survey's National Geologic Map Database indicates the "Caney Shale" is valid usage. However, the latest citation is a USGS publication by Cohee and Wright (1976)

Arkansas Geological Survey: Abandoned

Regional Distribution:

West-central Arkansas (Miser and Stone, 1929); Oklahoma (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Cane Creek (now known as Johns Creek), Pushmataha County, Oklahoma (Taff *in* Gould, 1925; Elias and Branson, 1959)

Type Section:

Not designated

Primary Reference Section:

Southwest of Bromide, Sec. 14, T. 2 S., R. 7 E., Johnston County, Oklahoma (Elias and Branson, 1959). This section was proposed as a type section by Elias and Branson (1959) in the frontal Ouachitas of Oklahoma, however this section is lithologically and chronostratigraphically different from what was known as the Caney Shale in the central Ouachitas, which is undifferentiated with the Johns Valley Shale / Formation (Sutherland, 1988; Suneson, 2016)

Origin of Name:

Not stated by original author (Taff, 1901). Cane Creek (now called Johns Creek), Pushmataha County, Oklahoma and has been mistakenly attributed to Caney [town], Atoka County, Oklahoma (Taff *in* Gould, 1925; Elias and Branson, 1959; Cline, 1960)

Original Reference:

Taff, J.A., 1901, Description of the Coalgate quadrangle: U.S. Geological Survey Geologic Atlas of the United States, Coalgate Folio, Indian Territory, n. 74, p. 2, 3

†CAPE LIMESTONE

Age:

Cincinnatian Series, Ordovician

This is an age equivalent to the Fernvale Limestone (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Cape limestone (Templeton and Willman, 1963)

Sub-Division(s):

None

Previous Name(s):

Fernvale Limestone (Purdue and Miser, 1916)

†Ada Limestone (Shideler, 1937)

Replaced By:

Part of the Fernvale Limestone. Cape Limestone was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas; Illinois, Indiana, and Missouri (Templeton and Willman, 1963)

Type Locality:

Cape Girardeau, Cape Girardeau, Missouri (Templeton and Willman, 1963)

Type Section:

On Main Street, just north of Broadway Street in Cape Girardeau, Cape Girardeau County, Missouri (Templeton and Willman, 1963)

Primary Reference Section:

Not designated

Origin of Name:

Cape Girardeau [town], Cape Girardeau and Scott Counties, Missouri (Templeton and Willman, 1963)

Original Reference:

Willman, H.B. and Templeton, J.S., 1953, The Cincinnatian Series in Illinois: unpublished paper presented to the 6th Annual Field Conference of the Indiana Geological Survey and Department of Geology of Indiana University

Willman and Templeton (1953) cited in:

Gutstadt, A.M., 1954, Stratigraphy of the upper Ordovician rocks in Iowa, Illinois, and Indiana: unpublished PhD dissertation, Northwestern University, Evanston, Illinois, 216 p

†CARROLLTON LIMESTONE

Age:

Osagean or Meramecian Series, Mississippian

Age equivalent of a part of the upper Boone Limestone / Formation (Purdue and Miser, 1916; Mazzullo *et al*., 2013)

Nomenclatorial Assignment(s):

Carrollton limestone (Williams, 1900)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Limestone / Formation of the Osage Group (Branner, 1891; Simonds, 1891)

Part of the Boone Limestone / Formation (Adams and Ulrich, 1904)

Replaced By:

Part of the Boone Limestone / Formation. This interval is equivalent to the interval informally known as the "undifferentiated Burlington-Keokuk" (Purdue and Miser, 1916)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas (Keroher *et al*., 1966)

Type Locality:

Cliff half a mile west of Carrollton, Carroll County, Arkansas (Purdue and Miser, 1916)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Carrollton [town], Carroll County, Arkansas (Williams, 1900)

Original Reference:

Williams, H.S., 1900, The zinc and lead region of north Arkansas: Annual report of the Geological Survey of Arkansas for 1892, v. 5, p. 334-337

†CASON LIMESTONE

Age:

Niagaran Series, Silurian (Williams, 1894)

Nomenclatorial Assignment(s):

Cason limestone (Williams, 1894)

Sub-Division(s):

None

Previous Name(s):

Part of the upper St. Clair Limestone (Penrose, 1891)

Replaced By:

Part of the upper St. Clair Limestone. Cason Limestone was discarded

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northern Arkansas (Keroher *et al*., 1966)

Type Locality:

Cason tract and mine, near Batesville, Independence County, Arkansas (Williams, 1894)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Cason tract and mine, near Batesville, Independence County, Arkansas (Williams, 1894)

Original Reference:

Williams, H.S., 1894, On the age of the manganese beds of the Batesville region of Arkansas: The American Journal of Science, 3rd series, v. 48, p. 325-331

CASON SHALE

Age:

Cincinnatian Series, Ordovician (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Cason shale (Williams, 1894)

Sub-Division(s):

None. However, some consider the Brassfield Limestone to be a member of the Cason Shale (McFarland, 1998, revised 2004)

Previous Name(s):

Batesville Ash-bed (Williams, 1891; Miser, 1933 *in* Wilmarth, 1938)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Cason Shale	(formal)
Arkansas Geological Survey:	Cason Shale	(formal)

Regional Distribution:

Northern Arkansas (McFarland, 1998, revised 2004)

Type Locality:

Cason tract and mine, near Batesville, Independence County, Arkansas (Williams, 1894)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Cason tract and mine, near Batesville, Independence County, Arkansas (Williams, 1894)

Original Reference:

Williams, H.S., 1894, On the age of the manganese beds of the Batesville region of Arkansas: The American Journal of Science, 3rd series, v. 48, p. 325-331

CAVANAL COAL BED

Age:

Desmoinesian Series, Pennsylvanian (Haley, 1960)

Nomenclatorial Assignment(s):

Cavanal coal of the Savanna formation (Hendricks and Parks, 1950)

Cavanal coal bed of the Savanna formation (Haley, 1960)

Sub-Division(s):

None

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Winslow, 1888)

Part of the †Sebastian Stage of the †Coal Measures (Possibly part of the †Belva Shale, †Hartwell Sandstone, or †Tomlinson Shale) (Winslow *in* Stevenson, 1896)

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Cavanal coal bed of the Savanna Formation (informal)

Arkansas Geological Survey: Cavanal coal bed of the Savanna Formation (informal)

Regional Distribution:

West-central Arkansas; Oklahoma (Haley, 1960)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Cavanal Mountains, Oklahoma

Original Reference:

Taff, J.A. and Adams, G.I., 1900, Geology of the eastern Choctaw coal field, Indian Territory, *in* Twenty-first annual report of the United States Geological Survey, part 2, General geology, economic geology, Alaska: U.S. Geological Survey Annual Report, p. 292

†CAVANIOL GROUP

Age:

Desmoinesian Series, Pennsylvanian (Keroher *et al*., 1966)

This is an age equivalent to the McAlester Formation, Savanna Formation, and Boggy Formation (Collier, 1907, Hendricks and Parks, 1950, McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Cavaniol group of the Coal Measures (Drake, 1897)

Sub-Division(s):

Huntington coal bed

McAlester coal bed

Previous Name(s):

†Upper or Western Coal Bearing Division (Winslow, 1888)

Possibly, †Poteau Stage (including the †Poteau Shale), †Sebastian Stage (including the †Belva Shale, †Greenwood Sandstone, †Hartwell Sandstone, †Ozark Sandstone, and †Tomlinson Shale), and the †Spadra Stage of the †Coal Measures (Winslow *in* Stevenson, 1896)

Replaced By:

†McAlester Group (including the †Spadra Shale, †Fort Smith Formation, and †Paris Shale) and Savanna Formation (Collier, 1907)

McAlester Formation, Savanna Formation, Boggy Formation (Hendricks and Parks, 1950)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas; Oklahoma (Keroher *et al*., 1966)

Type Area:

Not stated. Presumably, Cavanal Mountains, Le Flore County, Oklahoma

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Cavanal Mountains [topographic feature], Le Flore County, Oklahoma

Original Reference:

Drake, N.F., 1897, A geological reconnaissance of the coal fields of the Indian Territory: Proceedings of the American Philosophical Society, v. 36, p. 361, 371-378, 388, 393, pl. 1

CHARLESTON COAL BED

Age:

Desmoinesian Series, Pennsylvanian (Haley, 1960)

Nomenclatorial Assignment(s):

Charleston coal / coal bed of the Fort Smith formation (Collier, 1907)

Charleston coal of the Savanna formation (Hendricks and Parks, 1950)

Charleston coal bed of the Savanna formation (Haley, 1960)

Charleston coal bed of the Savanna Formation of the Krebs Group (Haley and Hendricks, 1968)

Sub-Division(s):

None

Previous Name(s):

†Upper or Western Coal Bearing Division (Winslow, 1888)

†Sebastian Stage of the †Coal Measures (Winslow *in* Stevenson, 1896)

†Philpott coal bed (Haley, 1960). This name is synonymous to the Charleston coal bed

Replaced By:

None

Formal Designation:

U.S. Geological Survey:

Charleston coal bed of the Savanna Formation (informal)

Arkansas Geological Survey:

Charleston coal bed of the Savanna Formation (informal)

Regional Distribution:

West-central Arkansas, Oklahoma (Haley, 1960)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated in original reference. Charleston [town], Franklin County, Arkansas (Ray *in* Breckenridge, 1907)

Original Reference:

Collier, A.J., 1907, The Arkansas coal field: U.S. Geological Survey Bulletin, n. 326, p. 27-28, 49, 65, 66, 76, 85, 87, 92, 93, 98, 130-134, 137, 140, 147, pl. 1

CHATTANOOGA SHALE / FORMATION

Age:

Senecan Series, Devonian (Jusczuk, 2002)

Nomenclatorial Assignment(s):

Chattanooga formation / shale (Adams, 1905)

Sub-Division(s):

Chattanooga Shale Member (Llopis *et al*., 1988)

Sylamore Sandstone Member (Branner, Hopkins *in* Penrose, 1891)

Previous Name(s):

†Eureka Shale (Branner, 1891; Simonds, 1891)

†Noel Shale (Adams and Ulrich, 1904)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Chattanooga Shale	(formal)
Arkansas Geological Survey:	Chattanooga Formation	(formal)
	Chattanooga Shale	(formal)

Regional Distribution:

Northern Arkansas; Alabama, Kentucky, Mississippi, Oklahoma, and Tennessee (McFarland, 1998, revised 2004)

Type Locality:

Hillside exposure at north end of Cameron Hill, Chattanooga, Hamilton County, Tennessee (Wilmarth, 1938; Keroher *et al*., 1966)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Chattanooga [town], Hamilton County, Tennessee (Hayes, 1891). The map on plate 2 depicts Chattanooga on Devonian section

Original Reference:

Hayes, C.W., 1891, The overthrust faults of the southern Appalachians: Geological Society of America Bulletin, v. 2, p. 142-143

CHATTANOOGA SHALE MEMBER

Age:

Senecan Series, Devonian

This is an age equivalent to part of the Chattanooga Shale / Formation (Jusczuk, 2002)

Nomenclatorial Assignment(s):

Chattanooga Shale member of the Chattanooga Formation (Llopis *et al*., 1988)

Sub-Division(s):

None

Previous Name(s):

Part of the †Eureka Shale (Branner, 1891; Simonds, 1891)

Part of the †Noel Shale (Adams and Ulrich, 1904)

Part of the upper Chattanooga Shale / Formation (Adams and Ulrich, 1905)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:

Not in Use

Arkansas Geological Survey:

Chattanooga Shale Member of the Chattanooga Formation (informal)

Regional Distribution:

Northern Arkansas (Llopis *et al*., 1988)

Type Locality:

Beaver Dam, Carroll County, Arkansas (Llopis *et al*., 1988)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, the Chattanooga Shale Formation

Original Reference:

Llopis, J.L., Deaver, C.M., Butler, D.K., and Hartung, S.C., 1988, Comprehensive seepage assessment: Beaver Dam, Arkansas: Second International Conference on Case Histories in Geotechnical Engineering, v. 1, p. 519-526

†*CHICKASAW CREEK MEMBER / FORMATION

Age:

Chesterian Series, Mississippian (Cohee and Wright, 1976)

Nomenclatorial Assignment(s):

Chickasaw Creek Formation of the Stanley Group (Seely, 1963)

Chickasaw Creek Member of the Stanley Shale (Stone *et al*., 1973)

Sub-Division(s):

Chickasaw Creek Tuff of the Stanley Shale (Mose, 1969)

Previous Name(s):

Part of the unnamed "sandstones and shales" (Griswold, 1892)

Part of the Stanley Shale / Formation (Purdue, 1909a)

Replaced By:

Part of the Stanley Shale / Formation. Chickasaw Creek Member / Formation was discarded

Formal Designation:

U.S. Geological Survey:

Chickasaw Creek Member of the Stanley Shale (uncertain)*

*The U.S. Geological Survey's National Geologic Map Database indicates the "Chickasaw Creek Member of the Stanley Shale" is valid usage. However, the latest citation is Cohee and Wright (1976)

Arkansas Geological Survey: Abandoned (uncertain)*

*Used the "Chickasaw Creek Shale" by Stone and Haley (1977) in the *Symposium on the Geology of the Ouachita Mountains, v.* 1, by Howard (2007) in Bulletin 23, by Haley *et al*. (1994) in Guidebook 94-2, and by Coleman *et al*. (1994) in Guidebook 94-2

Regional Distribution:

Southwestern Arkansas (Morris *et al*., 1975); Oklahoma (Keroher *et al*., 1966)

Type Locality:

Chickasaw Creek, Atoka County, Oklahoma (Harlton, 1938)

Type Section:

Immediately south of Chickasaw Creek in center of the south line of the SW¼, 600 feet north of section line of Sec. 7, T. 1 S., R. 13 E., Atoka County, Oklahoma (Harlton, 1938)

Primary Reference Section:

Center of W½ NE¼ NE¼ Sec. 26, T. 1 S., R. 12 E., Atoka County, Oklahoma (Harlton, 1938)

Origin of Name:

Chickasaw Creek [creek], Atoka County, Oklahoma (Harlton, 1938)

Original Reference:

Harlton, B.H., 1938, Stratigraphy of the Bendian of the Oklahoma salient of the Ouachita Mountains: American Association of Petroleum Geologists Bulletin, v. 22, n. 7, p. 854, 856, 874-878

†CHICKASAW CREEK TUFF

Age:

Chesterian Series, Mississippian

This is an age equivalent to part of the Chickasaw Creek Member / Formation (Cohee and Wright, 1976)

Nomenclatorial Assignment(s):

Chickasaw Creek Tuff of the Stanley Shale (Mose, 1969)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "sandstones and shales" (Griswold, 1892)

Part of the Stanley Shale / Formation (Purdue, 1909a)

Replaced By:

Part of the Stanley Shale / Formation. Chickasaw Creek Tuff was discarded, although some workers still use the name.

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Western Arkansas; Oklahoma (Mose, 1969)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, for the Chickasaw Creek Member / Formation

Original Reference:

Mose, D., 1969, The age of the Hatton Tuff of the Ouachita Mountains, southeastern Oklahoma: Geological Society of America Bulletin, v. 80, p. 2373-2378

CLIFTY LIMESTONE

Age:

Erian Series, Devonian (Jusczuk, 2002)

Nomenclatorial Assignment(s):

Clifty limestone (Purdue and Miser, 1916)

Sub-Division(s):

None

Previous Name(s):

None. The beds of this interval are not known to appear in any previous publications

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Clifty Limestone	(formal)
Arkansas Geological Survey:	Clifty Limestone	(formal)

Regional Distribution:

Northwestern Arkansas (McFarland, 1998, revised 2004)

Type Section, Locality, Area:

East Fork of Little Clifty Creek, SW½ Sec. 17, T. 19 N., R. 27 W, Benton County, Arkansas, where, within an area not exceeding 0.5 square miles, all its known exposures occur (Purdue and Miser, 1916)

Type Locality:

Little Clifty Creek, Benton County, Arkansas (Purdue and Miser, 1916)

Type Section:

East Fork of Little Clifty Creek, SW½ Sec. 17, T. 19 N., R. 27 W., Benton County, Arkansas (Purdue and Miser, 1916)

Primary Reference Section:

Not designated

Origin of Name:

Little Clifty Creek [creek], Carroll County, Arkansas (Purdue and Miser, 1916; McFarland, 1998, revised 2004)

Original Reference:

Purdue, A.H. and Miser, H.D., 1916, Description of the Eureka Springs and Harrison quadrangles: U.S. Geological Survey Geologic Atlas of the United States, Eureka Springs-Harrison folio, Arkansas-Missouri, n. 202, p. 6, 9

†COAL MEASURES

Age:

Pennsylvanian (Wilmarth, 1938)

Nomenclatorial Assignment(s):

coal measures (Owen, 1858)

Sub-Division(s):

†Appleton Stage (Winslow *in* Stevenson, 1896)

†Booneville Stage (Winslow *in* Stevenson, 1896)

†Danville Stage (Winslow *in* Stevenson, 1896)

†Norristown Stage (Winslow *in* Stevenson, 1896)

†Poteau Stage (Winslow *in* Stevenson, 1896)

†Sebastian Stage (Winslow *in* Stevenson, 1896)

†Spadra Stage (Winslow *in* Stevenson, 1896)

Previous Name(s):

None

Replaced By:

Pennsylvanian System of the Carboniferous Period

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northern and western Arkansas; throughout the United States (Winslow *in* Stevenson, 1896)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Descriptive name for the section of prominent coal bearing strata throughout the United States and Europe, where it was first used. There are other varieties of this name that was used prior to the "Coal Measures" name used by early geologists.

Original Reference:

The “Coal Measures” or “Terrain houiller” name originated from:

D’aubuisson de Voisins, J.F., 1819, Traité de Géognosie, ou exposé des connaissances actuelles sur la constitution physique et minerale du globe terrestre: F.G. Levrault, Strasbourg, v. 2, 665.

COLLIER SHALE / FORMATION

Age:

Millardan Series, Cambrian to Ibexian Series, Ordovician (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Collier shale (Purdue, 1909b)

Collier formation (Ham, 1959)

Collier shale formation (Pitt *et al*., 1961)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "shales, limestones, massive quartzose sandstones, cherty blue limestones, with gray, black, and yellow shales at the bottom" (Griswold, 1892)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Collier Shale	(formal)
Arkansas Geological Survey:	Collier Formation	(formal, but rarely used)

Collier Shale (formal)

Regional Distribution:

West-central Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Collier Creek, Montgomery County, Arkansas (Purdue, 1909a)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Collier Creek [creek], Montgomery County, Arkansas (Purdue, 1909a; Wilmarth, 1938)

Original Reference:

Purdue, A.H., 1909a, Slates of Arkansas: Geological Survey of Arkansas, p. 30, 31

Purdue, A.H., 1909b, Structure and stratigraphy of the Ouachita Ordovician area, Arkansas, (abstract): Geological Society of America Bulletin, v. 19, p. 557

COMPTON LIMESTONE

Age:

Kinderhookian Series, Mississippian (Mazzullo *et al*., 2013)

Nomenclatorial Assignment(s):

Compton Formation (Thompson and Fellows, 1969)

Compton Member of the St. Joe Limestone (Manger and Shanks, 1976)

Compton Member of the St. Joe Formation (Shelby, 1986)

Compton Formation of the St. Joe Group (Mazzullo *et al*., 2013)

Compton Limestone of the St. Joe Limestone (McGilvery *et al*., 2016)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Limestone / Formation of the †Osage Group

Part of the St. Joe Member of the Boone Limestone / Formation

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Compton (informal)

Compton Formation of the St. Joe Group. Proposed in 2013 (Mazzullo *et al*., 2013). As of yet, this name has not been published in any U.S. Geological Survey or Arkansas Geological Survey publications

Regional Distribution:

Northwestern Arkansas; Missouri and Oklahoma (Mazzullo *et al*., 2013)

Type Locality:

Along James River, Near Compton, Webster County, Missouri (Moore, 1928)

Type Section:

On Bridwell's Hill, along the James River, in the vicinity of Compton [town no longer exists], near west line of Webster County, Missouri (Moore, 1928). Beveridge and Clark (1952) indicated the center SE¼ SE¼ S½ Sec. 3, T. 29 N., R. 19 W., Webster County, Missouri as an approximate location with exposures of the unit, however the exposures have since been covered with gravel (Thompson, 1986)

Primary Reference Section:

Not designated

Origin of Name:

Compton post office (now non-existent), NW¼ NW¼ SE¼, Sec. 9, T. 29 N., R. 19 W., Webster County, Missouri (Moore, 1928; Thompson, 1986)

Original Reference:

Moore, R.C., 1928, Early Mississippian formations in Missouri: Missouri Bureau of Geology and Mines, 2nd series, v. 21, p. 108-109, 111, 118-122, 131, 158

COTTER DOLOMITE / FORMATION

Age:

Ibexian Series, Ordovician (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Cotter Dolomite (Purdue and Miser, 1916)

Cotter formation (Dake, 1921)

Cotter limestone and dolomite (Branner, 1927)

Cotter dolomite formation (Robinson, Jr., 1964)

Cotter Dolostone of the Yellville Group (Hedden, 1976)

Sub-Division(s):

†Crooked Creek Chert (Cullison, 1944)

†Blackjack Knob Member (Cullison, 1944)

†Bull Shoals Member (Hedden, 1976)

†Bull Shoals Mountain Chert (Cullison, 1944)

†Gainesville Sandstone Bed (Cullison, 1944)

†Lutie Member (Cullison, 1944)

Previous Name(s):

†Yellville Limestone (Adams and Ulrich, 1904)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Cotter Dolomite	(formal)
Arkansas Geological Survey:	Cotter Dolomite	(formal)

Regional Distribution:

Northern Arkansas; Missouri and Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

From the valley bottom, just upstream from west end of the old White River bridge at Cotter, Baxter County, Arkansas, to top of hill westward along the old U.S. Highway 62, Baxter County, Arkansas (McFarland, 1998, revised 2004)

Type Section:

Not designated

Primary Reference Sections:

Not designated

Origin of Name:

Cotter [town], Baxter County, Arkansas; named by E.O. Ulrich (Purdue and Miser, 1916)

Original Reference:

Purdue, A.H. and Miser, H.D., 1916, Description of the Eureka Springs and Harrison quadrangles: U.S. Geological Survey Geologic Atlas of the United States, Eureka Springs-Harrison folio, Arkansas-Missouri, n. 202, p. 2, 4, 5, 16, 17-18, 19, 20, 21

†CROOKED CREEK CHERT

Age:

Ibexian Series, Lower Ordovician

This is an age equivalent to part of the Cotter Dolomite / Formation (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Crooked Creek chert / chert bed of the Cotter dolomite (Cullison, 1944)

Sub-Division(s):

None

Previous Name(s):

Part of the Cotter Dolomite / Formation (Purdue and Miser, 1916)

Replaced By:

Part of the Cotter Dolomite / Formation. Crooked Creek Chert was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas (Keroher *et al*., 1966)

Type Locality:

Near Crooked Creek, south of Cotter, Sec. 35, T. 19 N., R. 15 W., Marion County, Arkansas (Cullison, 1944)

Type Section:

Near Crooked Creek, south of Cotter, Sec. 35, T. 19 N., R. 15 W., Marion County, Arkansas (Cullison, 1944)

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Crooked Creek [creek], Marion County, Arkansas

Original Reference:

Cullison, J.S., 1944, The stratigraphy of some Lower Ordovician formations of the Ozark uplift: University of Missouri School of Mines and Metallurgy Bulletin, Technical Series, v. 15, n. 2, p. 35, pls. 2, 9

†CROSS PLAINS SANDSTONE

Age:

Atokan Series, Pennsylvanian (Wilmarth, 1938; Keroher *et al.*, 1966; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Cross Plains sandstone of the Appleton Stage of the Coal Measures (Winslow *in* Stevenson, 1896)

Sub-Division(s):

None

Previous Name(s):

Part of the †Lower or Eastern Coal Bearing Division (Winslow, 1888)

Part of the unnamed "sandstones and shales" (Griswold, 1892)

Replaced By:

Part of the †Winslow Formation (Adams and Ulrich, 1904). The area north of the Arkansas coal fields changed to this name, while the southern parts in the coal field were known as the Atoka Shale (Collier, 1907; Croneis, 1930a) until the †Winslow Formation was abandoned by Adams and Ulrich (1904) in favor of the Atoka Formation (Wilmarth, 1938)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas; Oklahoma (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated

Original Reference:

Winslow, A.H., *in* Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 51

CRYSTAL MOUNTAIN SANDSTONE

Age:

Ibexian Series, Ordovician (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Crystal Mountain sandstone (Purdue, 1909a; 1909b)

Crystal Mountain sandstone formation (Pitt, 1982)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "shales, limestones, massive quartzose sandstones, cherty blue limestones, with gray, black, and yellow shales at the bottom" (Griswold, 1892)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Crystal Mountain Sandstone	(formal)
Arkansas Geological Survey:	Crystal Mountain Sandstone	(formal)

Regional Distribution:

West-central Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Area:

Crystal Mountains, Montgomery and Garland Counties, Arkansas (Purdue, 1909a)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Crystal Mountains [topographic feature], Montgomery County, Arkansas (Purdue, 1909a; McFarland, 1998, revised 2004)

Original Reference:

Purdue, A.H., 1909a, Slates of Arkansas: Geological Survey of Arkansas, p. 30, 32

Purdue, A.H., 1909b, Structure and stratigraphy of the Ouachita Ordovician area, Arkansas, (abstract): Geological Society of America Bulletin, v. 19, p. 557

†DANVILLE STAGE

Age:

Atokan Series, Pennsylvanian (Wilmarth, 1938; Keroher *et al.*, 1966; McFarland, 1998, revised, 2004)

Nomenclatorial Assignment(s):

Danville Stage of the Coal Measures (Winslow *in* Stevenson, 1896)

Sub-Division(s):

None

Previous Name(s):

Part of the †Lower or Eastern Coal Bearing Division (Winslow, 1888)

Part of the unnamed "sandstones and shales" (Griswold, 1892)

Replaced By:

Part of the †Winslow Formation

Part of the lower Atoka Formation (Wilmarth, 1938)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas; Oklahoma (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Danville [town], Yell County, Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Original Reference:

Winslow, A.H., *in* Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 51

†DELANEY SANDSTONE MEMBER

Age:

Morrowan Series, Pennsylvanian

Equivalent to the †middle Bloyd sandstone (Zachry and Haley, 1975)

Nomenclatorial Assignment(s):

Delaney Sandstone Member of the Winslow Formation (Glenn, 1973)

Sub-Division(s):

None

Previous Name(s):

†False Millstone Grit (Harris, 1891). This name was misattributed to the Delaney Sandstone bed

Part of the Boston Group (Branner, 1891; Simonds, 1891)

Part of the Morrow Formation (Adams and Ulrich, 1904)

Part of the Bloyd Shale / Formation of the †Morrow Group (Purdue, 1907)

†Greenland Sandstone Member (Sandlin, 1968). This name was misattributed to the Delaney Sandstone bed

Replaced By:

†middle Bloyd sandstone (Zachry and Haley, 1975)

†Gaither Sandstone Member (Crowder, 1982)

†Gaither Mountain Sandstone Member (Teas, 2002)

Parthenon Sandstone (Zachry and Chandler, 2010)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas (Glenn, 1973)

Type Locality:

Along the East Fork of the White River, near Delaney, Madison County, along Lollars Branch (Glenn, 1973)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Delaney [town], Madison County, Arkansas

Original Reference:

Glenn, J.M., 1973, Stratigraphy and depositional environment of a middle Bloyd sandstone, Madison and Washington counties, Arkansas: unpublished Master's thesis, University of Arkansas, Fayetteville, Arkansas, 60 p

†DOTSON BLACK SHEETY SHALE

Age:

Chesterian Series, Mississippian (Wilmarth, 1938; Haley *et al*., 1976, revised 1993)

Nomenclatorial Assignment(s):

Dotson black shale / sheety shale (Owen, 1858)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

Part of the lower Fayetteville Shale. Dotson Black Sheety Shale was discarded (Wilmarth, 1938)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Wharton's Creek, Madison County, Arkansas (Owen, 1858)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Dotson's farm [farm], on Wharton's Creek, Madison County, Arkansas (Owen, 1858)

Original Reference:

Owen, D.D., 1858, First report of a geological reconnoissance of the northern counties of Arkansas, made during the years 1857 and 1858: Johnson and Yerkes, Little Rock, p. 101-102

DUTCHTOWN LIMESTONE

Age:

Whiterockian Series, Ordovician (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Dutchtown limestone (Twehhofel *et al*., 1954)

Sub-Division(s):

None

Previous Name(s):

This unit was attributed to unknown surface exposures (Twehhofel *et al*., 1954) when it has been stated that there are no surface exposures of this unit in Arkansas (Caplan, 1954)

Replaced By:

The Dutchtown Limestone was used in the subsurface of Arkansas (Caplan, 1954), however, a correlation chart of the North American Ordovician formations indicates this unit was found in unreferenced surface exposures in Arkansas (Twehhofel *et al*., 1954)

Formal Designation:

U.S. Geological Survey:	Not in Use	
Arkansas Geological Survey:	Dutchtown Limestone	(subsurface only)

Regional Distribution:

Northern Arkansas (now recognized in the subsurface only) (Caplan, 1954; Twehofel *et al*., 1954); Missouri (Keroher *et al*., 1966)

Type Locality:

In an abandoned quarry, SW¼ NW¼ NW¼ Sec. 20, T. 30 N., R. 13 E., one and three-tenths of a mile east of Dutchtown, Cape Girdeau County, Missouri (McQueen, 1937)

Type Section:

In an abandoned quarry, SW¼ NW¼ NW¼ Sec. 20, T. 30 N., R. 13 E., one and three-tenths of a mile east of Dutchtown, Cape Girdeau County, Missouri (McQueen, 1937)

Primary Reference Section:

Not designated

Origin of Name:

Dutchtown, Cape Girdeau County, Missouri (McQueen, 1937)

Original Reference:

McQueen, H.S., 1937, The Dutchtown, a new lower Ordovician formation in southeastern Missouri, *in* Biennial report of the state geologist transmitted to the fifty-ninth general assembly: Missouri Geological Survey and Water Resources Biennial Report, app. 1, p. 12-26

DYE MEMBER / SHALE MEMBER

Age:

Morrowan Series, Pennsylvanian (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Dye Shale Member of the Bloyd Formation (Henbest, 1962)

Dye Member of the Bloyd Formation (McFarland, 1998, revised 2004)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "coal-bearing shale" of the †Boston Group (Branner, 1891; Simonds, 1891)

Part of the unnamed "coal-bearing shale" of the †Morrow Formation (Adams and Ulrich, 1904)

Part of the Bloyd Shale of the †Morrow Group (Purdue, 1907b)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Dye Shale Member of the Bloyd Formation	(formal)
	Dye Member of the Bloyd Shale	(formal)

Arkansas Geological Survey: Dye Shale Member of the Bloyd Formation (formal)

Regional Distribution:

Northwestern Arkansas (Henbest, 1962)

Type Locality:

From the E½ Sec. 3, T. 14 N., R. 30 W., to the center of the north side of Sec. 4, T. 14 N., R. 30 W. (Henbest, 1962)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Dye Creek [creek], Washington County, Arkansas (Henbest, 1962)

Original Reference:

Henbest, L.G., 1962, New members of the Bloyd Formation of Pennsylvanian age, Washington County, Arkansas, *in* Short papers in geology, hydrology, and topography, articles 120-179: U.S. Geological Survey Professional Paper, n. 450-D, p. D42-D44

EAGLES BLUFF SHALE

Age:

Senecan Series, Devonian (Jusczuk, 2002; Boardman *et al*., 2009)

Nomenclatorial Assignment(s):

Eagles Bluff Shale (Boardman *et al*., 2009)

Sub-Division(s):

None

Previous Name(s):

†Eureka Shale (Branner, 1891; Simonds, 1891)

†Noel Shale (Adams and Ulrich, 1904)

Chattanooga Shale (Adams, 1905)

Replaced By:

Chattanooga Shale. Eagles Bluff Shale has yet to be formally used

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Eagles Bluff Shale. Proposed in 2009 (Boardman *et al*., 2009). As of yet, this name has not been published in any U.S. Geological Survey or Arkansas Geological Survey publications

Regional Distribution:

Northwestern Arkansas; Missouri and Oklahoma (Boardman *et al*., 2009)

Type Locality:

Roadcut on Oklahoma Highway 10, northeast of Tahlequah, Cherokee County, Oklahoma (Boardman *et al*., 2009)

Type Section:

Not formally designated. The original reference states that a type section is in a roadcut on Oklahoma Highway 10, northeast of Tahlequah, Cherokee County, Oklahoma, but no measured section is published (Boardman *et al*., 2009)

Primary Reference Section:

Not formally designated. The original reference states that a primary reference section is in roadcuts at No Head Hollow, Cherokee County, Oklahoma, but no measured section is published (Boardman *et al*., 2009)

Origin of Name:

Not stated. Presumably, Eagles Bluff [topographic feature], on Oklahoma Highway 10, northeast of Tahlequah, Cherokee County, Oklahoma

Original Reference:

Boardman, D., Puckette, J.O., Watney, W.L., Emen, I., Cruse, A.M., and Hurst, D.D., 2009, The Eagles Bluff Shale: a new upper Devonian black shale formation in the Ozark Uplift of northeastern Oklahoma, northwestern Arkansas, and southwestern Missouri (abstract): Geological Society of America Abstracts with Programs, v. 41, n. 2, p. 12

†ELSEY FORMATION

Age:

Osagean Series, Mississippian (Thompson, 1986)

Nomenclatorial Assignment(s):

Elsey Formation (Robertson, 1967; Thompson, 1986)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Limestone / Formation of the †Osage Group (Branner, 1891; Simonds, 1891)

Part of the Boone Limestone / Formation (Adams and Ulrich, 1904)

Grand Falls Chert Member of the Boone Formation (Gordon, 1964)

Replaced By:

Part of the Boone Limestone / Formation

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas; Kansas, Missouri, and Oklahoma (Thompson, 1986)

Type Locality:

Near Elsey, in a roadcut on north side of Missouri Highway 248 (formerly Missouri Highway 148) in NW¼ NW¼ SE¼ and the NE¼ NE¼ SW¼ Sec. 5, T. 24 N., R. 24 W., Stone County, Missouri. (Robertson, 1967)

Type Section:

Near Elsey, in a roadcut on north side of Missouri Highway 248 (formerly Missouri Highway 148) in NW¼ NW¼ SE¼ and the NE¼ NE¼ SW¼ Sec. 5, T. 24 N., R. 24 W., Stone County, Missouri. (Robertson, 1967)

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Elsey [town], Stone County, Missouri (Robertson, 1967)

Original Reference:

Robertson, C.E., 1967, The Elsey Formation and its relationship to the Grand Falls Chert: Missouri Geological Survey and Water Resources Report of Investigations, n. 38, 62 p

†ENCRINITAL LIMESTONE

Age:

Osagean Series, Mississippian

Age equivalent part of the Boone Limestone / Formation (Wilmarth, 1938; Mazzullo *et al*., 2013)

Nomenclatorial Assignment(s):

Encrinital limestone (Owen, 1860)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

Boone Limestone / Formation (Easton, 1942)

Keokuk Limestone

Burlington Formation (Mazzullo *et al*., 2013)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Uncertain on the full distribution. This name is known to have been used in Northwestern Arkansas (Owen, 1860), Indiana (Owen, 1837), Iowa (Hall, 1858), Kentucky (Owen, 1857), Missouri (Swallow, 1855)

Type Locality:

Indiana (Owen, 1837)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

The obsolete crinoid fossil term “encrinites”, which are found within the unit (Owen, 1837)

Original Reference:

Owen, D.D., 1837, Report, *in* Journal of the Senate of the State of Indiana during the twenty-second session of the general assembly, commenced at Indianapolis on Monday the fourth day of December, 1837: Douglass and Noel, Indianapolis, p. 127-157

†EUREKA SHALE

Age:

Senecan Series, Devonian

This is an age equivalent to the Chattanooga Shale / Formation (Jusczuk, 2002)

Nomenclatorial Assignment(s):

Eureka shale (Branner, 1891; Simonds, 1891)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

†Noel Shale (Adams and Ulrich, 1904)

Chattanooga Shale / Formation (Adams and Ulrich, 1905)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northern Arkansas (Keroher *et al*., 1966)

Type Locality:

Near Eureka Springs, Carroll County, Arkansas (Simonds, 1891)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Eureka Springs [town], Carroll County, Arkansas (Simonds, 1891). Name credited to Branner (1891)

Original Reference:

Branner, J.C., 1891, Introduction: Arkansas Geological Survey Annual Report 1888, v. 4, p. xiii

Simonds, F.W., 1891, The geology of Washington County: Arkansas Geological Survey Annual Report 1888, v. 4, p. 26-27

EVERTON FORMATION

Age:

Whiterockian Series, Ordovician (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Everton limestone (Ulrich *in* Purdue, 1907a)

Everton formation

Everton Group (Templeton and Willman, 1963)

Sub-Division(s):

Calico Rock Sandstone Member (Suhm, 1974; McFarland, 1998, revised 2004)

Jasper Limestone Member (Suhm, 1974)

King(s) River Sandstone Member (Purdue and Miser, 1916; McFarland, 1998, revised 2004)

†Member A (Suhm, 1970, 1974)

†Member B (Suhm, 1970, 1974)

†Member B' (Suhm, 1970)

†Member B" (Suhm, 1970)

†Member C (Suhm, 1970, 1974)

Newton Sandstone Member (Suhm, 1974; McFarland, 1998, revised 2004)

Sneeds Limestone Lentil / Dolomite Member (Suhm, 1974; Purdue and Miser, 1916)

Previous Name(s):

Part of the †Calciferous Formation (Penrose, 1891)

Part of the unnamed "magnesian limestone, sandstone, cherts, etc." (Hopkins, 1893)

Part of the †Yellville Formation (Adams and Ulrich, 1904)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Everton Formation	(formal)
Arkansas Geological Survey:	Everton Formation	(formal)

Regional Distribution:

Northern Arkansas; Missouri (McFarland, 1998, revised 2004)

Type Locality:

Near Everton, Boone County, Arkansas (Purdue, 1907a)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Everton [town], Boone County, Arkansas; name credited to E.O. Ulrich (Purdue, 1907a)

Original Reference:

Purdue, A.H., 1907a, Cave-sandstone deposits of the southern Ozarks: Geological Society of America Bulletin, v. 18, n. 1, p. 251-256

†EVERTON FORMATION – MEMBER A

Age:

Whiterockian Series, Ordovician

This is an age equivalent to part of the Everton Formation (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Unnamed Limestone-Sandstone Member A / Unnamed Member A / Member A of the Everton Formation (Suhm, 1970a)

limestone-sandstone member A of the Everton Formation (Suhm, 1973)

Sub-Division(s):

None

Previous Name(s):

Part of the †Calciferous Formation (Penrose, 1891)

Part of the unnamed "magnesian limestone, sandstone, cherts, etc." (Hopkins, 1893)

Part of the †Yellville Formation (Adams and Ulrich, 1904)

Part of the Everton Formation (Ulrich *in* Purdue, 1907a)

Replaced By:

Part of the Everton Formation. "Member A" was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas (Suhm, 1970b)

Type Area:

Along the White River, Baxter and Izard Counties, Arkansas (Suhm, 1970b)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

None

Original Reference:

Suhm, R.W., 1970a, Members of the Everton Formation (early medial Ordovician) in northern Arkansas (abstract), Proceedings of the Nebraska Academy of Sciences, 80th annual meeting, April, p. 38

Suhm, R.W., 1970b, Stratigraphy of the Everton Formation (early medial Ordovician) along the Buffalo-White River traverse, northern Arkansas: unpublished Ph.D. dissertation, University of Nebraska, p. 22, 39-41

†EVERTON FORMATION – MEMBER B

Age:

Whiterockian Series, Ordovician

This is an age equivalent to part of the Everton Formation (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Unnamed Limestone-Sandstone Member B / Unnamed Member B / Member B of the Everton Formation (Suhm, 1970a)

limestone-sandstone member B of the Everton Formation (Suhm, 1973)

Sub-Division(s):

None

Previous Name(s):

Part of the †Calciferous Formation (Penrose, 1891)

Part of the unnamed "magnesian limestone, sandstone, cherts, etc." (Hopkins, 1893)

Part of the †Yellville Formation (Adams and Ulrich, 1904)

Part of the Everton Formation (Ulrich *in* Purdue, 1907a)

Replaced By:

Part of the Everton Formation. "Member B" was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas (Suhm, 1970b)

Type Area:

Along the Buffalo River and White River, northern Arkansas (Suhm, 1970b)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

None

Original Reference:

Suhm, R.W., 1970a, Members of the Everton Formation (early medial Ordovician) in northern Arkansas (abstract), Proceedings of the Nebraska Academy of Sciences, 80th annual meeting, April, p. 38

Suhm, R.W., 1970b, Stratigraphy of the Everton Formation (early medial Ordovician) along the Buffalo-White River traverse, northern Arkansas: unpublished Ph.D. dissertation, University of Nebraska, p. 22, 43-46

†EVERTON FORMATION – MEMBER B'

Age:

Whiterockian Series, Ordovician

This is an age equivalent to part of the Everton Formation (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Unnamed Member B' / Member B' of the Everton Formation (Suhm, 1970a)

Sub-Division(s):

None

Previous Name(s):

Part of the †Calciferous Formation (Penrose, 1891)

Part of the unnamed "magnesian limestone, sandstone, cherts, etc." (Hopkins, 1893)

Part of the †Yellville Formation (Adams and Ulrich, 1904)

Part of the Everton Formation (Ulrich *in* Purdue, 1907a)

Replaced By:

Part of the Everton Formation. "Member B' " was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas (Suhm, 1970b)

Type Area:

Along the Buffalo River and White River, northern Arkansas (Suhm, 1970b)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

None

Original Reference:

Suhm, R.W., 1970a, Members of the Everton Formation (early medial Ordovician) in northern Arkansas (abstract), Proceedings of the Nebraska Academy of Sciences, 80th annual meeting, April, p. 38

Suhm, R.W., 1970b, Stratigraphy of the Everton Formation (early medial Ordovician) along the Buffalo-White River traverse, northern Arkansas: unpublished Ph.D. dissertation, University of Nebraska, p. 22, 46-48

†EVERTON FORMATION – MEMBER B"

Age:

Whiterockian Series, Ordovician

This is an age equivalent to part of the Everton Formation (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Unnamed Member B" / Member B" of the Everton Formation (Suhm, 1970a)

Sub-Division(s):

None

Previous Name(s):

Part of the †Calciferous Formation (Penrose, 1891)

Part of the unnamed "magnesian limestone, sandstone, cherts, etc." (Hopkins, 1893)

Part of the †Yellville Formation (Adams and Ulrich, 1904)

Part of the Everton Formation (Ulrich *in* Purdue, 1907a)

Replaced By:

Part of the Everton Formation. "Member B" " was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas (Suhm, 1970b)

Type Area:

Along the Buffalo River and White River, northern Arkansas (Suhm, 1970b)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

None

Original Reference:

Suhm, R.W., 1970a, Members of the Everton Formation (early medial Ordovician) in northern Arkansas (abstract), Proceedings of the Nebraska Academy of Sciences, 80th annual meeting, April, p. 38

Suhm, R.W., 1970b, Stratigraphy of the Everton Formation (early medial Ordovician) along the Buffalo-White River traverse, northern Arkansas: unpublished Ph.D. dissertation, University of Nebraska, p. 22, 48-49

†EVERTON FORMATION – MEMBER C

Age:

Whiterockian Series, Ordovician

This is an age equivalent to part of the Everton Formation (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Unnamed Dolomitic Sandstone-Dolomite Member C / Unnamed Member C / Member C of the Everton Formation (Suhm, 1970a)

dolomitic sandstone-dolomite member C of the Everton Formation (Suhm, 1973)

Sub-Division(s):

None

Previous Name(s):

Part of the †Calciferous Formation (Penrose, 1891)

Part of the unnamed "magnesian limestone, sandstone, cherts, etc." (Hopkins, 1893)

Part of the †Yellville Formation (Adams and Ulrich, 1904)

Part of the Everton Formation (Ulrich *in* Purdue, 1907a)

Replaced By:

Part of the Everton Formation. "Member C" was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas (Suhm, 1970b)

Type Area:

Along the Buffalo River and White River, northern Arkansas (Suhm, 1970b)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

None

Original Reference:

Suhm, R.W., 1970a, Members of the Everton Formation (early medial Ordovician) in northern Arkansas (abstract), Proceedings of the Nebraska Academy of Sciences, 80th annual meeting, April, p. 38

Suhm, R.W., 1970b, Stratigraphy of the Everton Formation (early medial Ordovician) along the Buffalo-White River traverse, northern Arkansas: unpublished Ph.D. dissertation, University of Nebraska, p. 22, 52-54

†FALSE MILLSTONE GRIT

Age:

Morrowan Series, Pennsylvanian

Nomenclatorial Assignment(s):

false Millstone grit (Harris, 1891)

Sub-Division(s):

None

Previous Name(s):

†Millstone Grit

Replaced By:

Part of the †Millstone Grit (Owen, 1858)

Part of the †Winslow Formation / Group (Adams and Ulrich, 1904)

Part of the Atoka Formation (Collier, 1907; Purdue, 1909a)

Greenland Sandstone Member of the Atoka Formation. The †middle Bloyd sandstone (and its synonymous names: †Delaney Sandstone Member, †Gaither Sandstone Member, and †Gaither Mountain Sandstone Member) have been misattributed to this name (Sandlin, 1968)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas (Harris, 1891)

Type Locality:

Washington County, Arkansas (Harris, 1891)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Some workers have misattributed the †Millstone Grit to this unit leading to this unit being informally named the “false” Millstone Grit

Original Reference:

Harris, G.D., 1891, The Fayetteville-Huntsville section, *in* Simonds, F.W., 1891, The geology of Washington County: Arkansas Geological Survey Annual Report 1888, v. 4, p. 149-154

FAYETTEVILLE SHALE

Age:

Chesterian Series, Mississippian (Haley *et al*., 1976, revised 1993)

Nomenclatorial Assignment(s):

Fayetteville shale (Branner, 1891; Simonds, 1891)

Fayetteville formation (Adams and Ulrich, 1904)

Sub-Division(s):

†Koger Limestone Lentil (Taylor, 1964)

†Mayes Limestone Member (Easton, 1942)

Wedington Sandstone Member (Adams and Ulrich, 1904; McFarland, 1998, revised 2004)

Previous Name(s):

Part of the lower †Marshall Shale (Adams and Ulrich, 1904)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Fayetteville Shale	(formal)
Arkansas Geological Survey:	Fayetteville Shale	(formal)

Regional Distribution:

Northern Arkansas; Missouri and Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Fayetteville, Washington County, Arkansas (Ogren, 1968)

Type Section:

Not designated

Primary Reference Section:

Oakleigh Mountain, NW¼ NE¼ Sec. 7, T. 21 N., R. 28 W., Barry County, Missouri. This section has previously been described by Beveridge and Clark (1952) and Thompson (1972) (Thompson, 1986)

Origin of Name:

Fayetteville [town], Washington County, Arkansas (Simonds, 1891). Name credited to Simonds (Branner, 1891)

Original Reference:

Branner, J.C., 1891, Introduction: Arkansas Geological Survey Annual Report 1888, v. 4, p. xiii

Simonds, F.W., 1891, The geology of Washington County: Arkansas Geological Survey Annual Report 1888, v. 4, p. 26, 42-49

†FERN GLEN FORMATION

Age:

Osagean Series, Mississippian (Ulrich, 1915)

Nomenclatorial Assignment(s):

Fern Glen (Ulrich, 1911)

Fern Glen Formation (Ulrich, 1915)

Fern Glen limestone of the Boone limestone (Giles, 1935)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Limestone / Formation of the †Osage Group (Branner, 1891; Simonds, 1891)

Part of the Boone Limestone / Formation (Adams and Ulrich, 1904)

Replaced By:

†Ada Limestone (Shilder, 1937)

†Cape Limestone (Templeton and Willman, 1963)

Part of the Boone Limestone / Formation. Other names were discarded and this interval reverted back to its previous name

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas (Ulrich, 1911); Illinois and Missouri (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Fern Glen Railroad Station (now non-existent), St. Louis County, Missouri (Weller, 1906)

Type Section:

Not designated

Primary Reference Section (Composite):

1. Railroad cut at Fern Glen, on the north bank of the Meramec River, center SE¼ Sec. 14, T. 44 N., R. 4 E. (Thompson, 1986)
2. Railroad cut at Fern Glen, NW¼ SW¼ SW¼ Sec. 13, T. 44 N., R. 4 E. (Thompson, 1986)

Origin of Name:

Fern Glen [railroad station], St. Louis County, Missouri (Weller, 1906)

Original Reference:

Weller, S., 1906, Kinderhook faunal studies, part 4, The fauna of the Glen Park Limestone: Transactions of the Academy of Science of St. Louis, v. 16, p. 438

FERNVALE LIMESTONE

Age:

Cincinnatian Series, Ordovician (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Fernvale limestone (Purdue and Miser, 1916)

Replaced By:

None

Sub-Division(s):

None

Previous Name(s):

Part of the upper †Polk Bayou Limestone (Miser, 1921; Croneis, 1930a)

Formal Designation:

U.S. Geological Survey:	Fernvale Limestone	(formal)
Arkansas Geological Survey:	Fernvale Limestone	(formal)

Regional Distribution:

Northern Arkansas; Alabama, Illinois, Missouri, Oklahoma, and Tennessee (McFarland, 1998, revised 2004)

Type Locality:

Near Fernvale, Williamson County, Tennessee (Hayes and Ulrich, 1903)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Fernvale [town], Williamson County, Tennessee (Hayes and Ulrich, 1903)

Original Reference:

Hayes, C.W. and Ulrich, E.O., 1903, Description of the Columbia quadrangle: U.S. Geological Survey Geologic Atlas of the United States, Columbia folio, Tennessee, n. 95, p. 2

†FORK MOUNTAIN SLATE

Age:

Meramecian to Chesterian (?) Series, Mississippian

This is an age equivalent to the lower Stanley Shale (Miser, 1918; Wright, 2002)

Nomenclatorial Assignment(s):

Fork Mountain Slate (Purdue, 1909a)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed “sandstones and shales” (Griswold, 1892)

Replaced By:

Part of the lower Stanley Shale (Miser, 1918)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Southwestern Arkansas (Keroher *et al*., 1966)

Type Locality:

Fork Mountain, Polk County, Arkansas (Purdue, 1909a)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Fork Mountain [topographic feature], Polk County, Arkansas (Purdue, 1909a)

Original Reference:

Purdue, A.H., 1909a, Slates of Arkansas: Geological Survey of Arkansas, p. 30, 40

†FORT SMITH FORMATION

Age:

Desmoinesian Series, Pennsylvanian

This is an age equivalent to parts of the McAlester Formation and Savanna Formation (Wilmarth, 1938; Hendricks and Parks, 1950; Keroher *et al*., 1966)

Nomenclatorial Assignment(s):

Fort Smith formation of the McAlester group (Collier, 1907)

Sub-Division(s):

Charleston coal bed (Miser and Stone, 1929)

†Tennessee Sandstone Member (Collier, 1907)

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Winslow, 1888; Collier, 1907)

Part of the lower †Sebastian Stage (and possibly part of the †Spadra Stage) of the †Coal Measures (Winslow *in* Stevenson, 1896)

Replaced By:

Upper McAlester Formation and lower Savanna Formation (Hendricks and Parks, 1950)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Near Fort Smith and Greenwood, Sebastian County, Arkansas (Collier, 1907)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Fort Smith [town], Sebastian County, Arkansas (Collier, 1907)

Original Reference:

Collier, A.J., 1907, The Arkansas coal field: U.S. Geological Survey Bulletin, n. 326, p. 12, 18-20

†GAINESVILLE SANDSTONE BED

Age:

Ibexian Series, Ordovician

This is an age equivalent to part of the Cotter Dolomite / Formation (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Gainesville sandstone of the Blackjack Knob member of Theodosia formation of the Jefferson City group (Cullison, 1944)

Gainesville Sandstone of the Lutie Member of the Cotter Dolostone of the Yellville Group (Hedden, 1976)

Sub-Division(s):

None

Previous Name(s):

Part of the †Yellville Limestone (Adams and Ulrich, 1904)

Part of the Cotter Dolomite / Formation (Purdue and Miser, 1916)

Replaced By:

Part of the Cotter Dolomite / Formation. Gainesville Sandstone Bed was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas; Missouri (Keroher *et al*., 1966)

Type Locality:

On Missouri Highway 80, Sec. 5, T. 22 N., R. 13 W., Ozark County, Missouri (Cullison, 1944)

Type Section:

On Missouri Highway 80, Sec. 5, T. 22 N., R. 13 W., Ozark County, Missouri (Cullison, 1944)

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Well exposed on Missouri Highway 80 just east of county seat [Gainesville] of Ozark County, Missouri (Cullison, 1944)

Original Reference:

Cullison, J.S., 1944, The stratigraphy of some Lower Ordovician formations of the Ozark uplift: University of Missouri School of Mines and Metallurgy Bulletin, Technical Series, v. 15, n. 2, p. 31, pl. 2

†GAITHER SANDSTONE MEMBER

Age:

Morrowan Series, Pennsylvanian

Nomenclatorial Assignment(s):

Gaither Sandstone Member of the Bloyd Formation (Crowder, 1982)

Sub-Division(s):

None

Previous Name(s):

†"false" Millstone grit (Harris, 1891). This name was misattributed to the Gaither Sandstone bed

Part of the Boston Group (Branner, 1891; Simonds, 1891)

Part of the Morrow Formation (Adams and Ulrich, 1904)

†Greenland Sandstone of the Atoka Formation (Sandlin, 1968). This name was misattributed to the Gaither Sandstone bed

†Delaney Sandstone Member of the †Winslow Formation (Glenn, 1973)

Cannon Sand. Informal subsurface name (Crowder, 1982)

Replaced By:

†middle Bloyd sandstone of the Bloyd Formation (Zachry and Haley, 1975)

†Gaither Mountain Sandstone Member of the Bloyd Formation (Teas, 2002)

Parthenon Sandstone Member of the Bloyd Formation (Zachry and Chandler, 2010)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas (Crowder, 1982)

Type Locality:

Roadcut on Arkansas State Highway 43, on north side of Gaither Mountain, Sec. 27, T. 18 N., R. 21 W., Boone County, Arkansas (Crowder, 1982)

Type Section:

Not designated. Original reference includes a location, but not a measured section for this unit

Primary Reference Section:

Wharton Creek, NE ¼ NE ¼ SE ¼ SW ¼ Sec. 19, T. 16 N., R. 25 W., on east side of Arkansas Highway 74, Madison County, Arkansas (Crowder, 1982)

Origin of Name:

Gaither Mountain [topographic feature], Sec. 27, T. 18 N., R. 21 W., Boone County, Arkansas (Crowder, 1982)

Original Reference:

Crowder, R.K., 1982, Anatomy of a Pennsylvanian fluvial sheet sandstone, northwest Arkansas: unpublished Master's thesis, University of Arkansas, Fayetteville, Arkansas, 112 p.

†GAITHER MOUNTAIN SANDSTONE

Age:

Morrowan Series, Pennsylvanian

Nomenclatorial Assignment(s):

Gaither Mountain Sandstone of the Bloyd Formation (Teas, 2002)

Sub-Division(s):

None

Previous Name(s):

†"false" Millstone grit (Harris, 1891). This name was misattributed to the Gaither Mountain Sandstone bed

Part of the Boston Group (Branner, 1891; Simonds, 1891)

Part of the Morrow Formation (Adams and Ulrich, 1904)

†Greenland Sandstone of the Atoka Formation (Sandlin, 1968). This name was misattributed to the Gaither Mountain Sandstone bed

†Delaney Sandstone of the Winslow Formation (Glenn, 1973)

†middle Bloyd sandstone of the Bloyd Formation (Zachry and Haley, 1975)

†Gaither Sandstone Member of the Bloyd Formation (Crowder, 1978)

Replaced By:

†middle Bloyd sandstone of the Bloyd Formation (Zachry and Haley, 1975)

Parthenon Sandstone of the Bloyd Formation (Zachry and Chandler, 2010)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas (Teas, 2002)

Type Locality:

Gaither Mountain, Boone County, Arkansas (Teas, 2002)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated

Original Reference:

Teas, J.A.L., 2002, Petrology analysis of the Gaither Mountain Sandstone in north central Arkansas: unpublished honors thesis, University of Arkansas, Fayetteville, Arkansas, p. 7

†GAME REFUGE FORMATION

Age:

Morrowan Series, Pennsylvanian

This is an age equivalent to part of the Jackfork Sandstone / Formation (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Game Refuge Formation of the Jackfork Group (Walthall, 1967)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed “sandstones and shales” (Griswold, 1892)

Upper part of the †Brushy Knob Formation of the Jackfork Group (Walthall, 1967)

Replaced By:

†Brushy Knob Formation of the Jackfork Group (Morris, 1971)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Southwestern Arkansas (Walthall, 1967); Oklahoma (Keroher *et al*., 1966)

Type Locality:

Along Campbell Creek in the Round Prairie syncline, in Sec. 2, T. 2 S., R. 12 E., Atoka County, Oklahoma (Harlton, 1959; Cline and Shelburne, Jr., 1959)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

The Oklahoma state Game Refuge at Jerusalem Hollow in the western Kiamichi Range in Sections 28 and 29, T. 1 S., R. 18 E., Atoka County, Oklahoma. Campbell Creek was intended for the name, but was preoccupied and never proposed (Harlton, 1959; Cline and Shelburne, Jr., 1959)

Original Reference:

Harlton, B.H., 1959, Age classification of the upper Pushmataha Series in the Ouachita Mountains, *in* Geology of the Ouachita Mountains – a symposium, Dallas Geological Society and Ardmore Geological Society, p. 132, 135-136

Cline, L.M. and Shelburne, O.B., 1959, Late Mississippian – early Pennsylvanian stratigraphy of the Ouachita Mountains, Oklahoma, *in* Cline, L.M., Hilseweck, W.J., and Feray, D.E. (eds.), 1959, Geology of the Ouachita Mountains – a symposium: Dallas Geological Society and Ardmore Geological Society, p. 175-208

†*GAP RIDGE SANDSTONE MEMBER

Age:

Meramecian and/or Chesterian Series, Mississippian

This is an age equivalent to part of the Stanley Shale (Wright, 2002)

Nomenclatorial Assignment(s):

Gap Ridge member of the Stanley shale (Stearn, 1935)

Gap Ridge Sandstone Member of the Moyer Formation of the Stanley Group (Walthall, 1967)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed “sandstones and shales” (Griswold, 1892)

Replaced By:

Part of the Stanley Shale / Formation

Formal Designation:

U.S. Geological Survey:

Gap Ridge Sandstone Member of the Stanley Shale (uncertain)*

*The U.S. Geological Survey's National Geologic Map Database indicates the "Gap Ridge Sandstone Member of the Stanley Shale" is valid usage. However, the latest citation is a non-USGS publication by Clardy and Bush (1976)

Arkansas Geological Survey: Not in Use

Regional Distribution:

Southwestern Arkansas (Keroher *et al*., 1966)

Type Locality:

Gap Ridge Mine, Sec. 11, T. 7 S., R. 26 W., Pike County, Arkansas (Stearn, 1935)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Gap Ridge Mine [mine], Sec. 11, T. 7 S., R. 26 W., Pike County, Arkansas (Stearn, 1935)

Original Reference:

Stearn, N.H., *in* Hansell, J.M. and Reed, J.C., 1935, Quicksilver deposits near Little Missouri River, discussion: Transactions of the American Institute of Mining and Metallurgical Engineers, v. 115, p. 245

†GAYLOR SANDSTONE

Age:

Kinderhookian Series, Mississippian (Gordon, 1964)

Nomenclatorial Assignment(s):

Gaylor sandstone (Gordon, 1964)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Limestone / Formation of the †Osage Group (Branner, 1891; Simonds, 1891)

Part of the Boone Limestone / Formation (Adams and Ulrich, 1904)

Replaced By:

Bachelor Formation (Thompson and Fellows, 1969)

Part of the Boone Limestone / Formation

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northern Arkansas (Keroher, 1970)

Type Locality:

Not stated. Presumably, near Gaylor, Stone County, Arkansas (Thompson and Fellows, 1969)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Gaylor [town], Stone County, Arkansas (Keroher, 1970; Thompson and Fellows, 1969)

Original Reference:

Gordon, M., Jr., 1964, Carboniferous cephalopods of Arkansas: U.S. Geological Survey Professional Paper, n. 460, p. 11, 12

†GENEVIEVE GROUP

Age:

Chesterian to Morrowan Series, Pennsylvanian

This is an age equivalent to the interval ranging from the Fayetteville Shale to the Bloyd Shale / Formation (McFarland, 1988, revised 2004)

Nomenclatorial Assignment(s):

Genevieve group (Branner, 1891)

Sub-Division(s):

†Archimedes Limestone (Owen, 1858; Branner, 1891)

Kessler Limestone (Branner, 1891)

†Marshall Shale (Branner, 1891)

†Pentremital Limestone (Branner, 1891)

†Washington Shale and Sandstone (Branner, 1891)

Previous Name(s):

None

Replaced By:

†Boston Group (Branner, 1891)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas; Missouri (Williams, 1891b)

Type Locality:

Ste. Genevieve County, Missouri (Williams, 1891b)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Ste. Genevieve County, Missouri (Williams, 1891b)

Original Reference:

Williams, H.S., 1891, Correlation papers, Devonian and Carboniferous: U.S. Geological Survey Bulletin, n. 80, p. 169, 172

†GILBERT SHALES

Age:

Unknown Series, Pennsylvanian? (Wilmarth, 1938; Keroher *et al*., 1966)

Nomenclatorial Assignment(s):

Gilbert shales of the Coal Measures (Owen, 1858)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

Unknown

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

North-central Arkansas (Wilmarth, 1938)

Type Locality:

"Bald point" near Gilbert's farm, three or thirteen miles northwest of Searcy, White County, Arkansas (Owen, 1858; Smith, 1896)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Gilbert's farm [farm], White County, Arkansas (Owen, 1858). Owen (1858) said it is three miles north-west of Searcy, White County, Arkansas, however, Smith (1896) said it is 13 miles north-west of Searcy, Arkansas

Original Reference:

Owen, D.D., 1858, First report of a geological reconnoissance of the northern counties of Arkansas, made during the years 1857 and 1858: Johnson and Yerkes, Little Rock, p. 68-69

†*GRAND FALLS CHERT MEMBER

Age:

Osagean Series, Mississippian (Robertson, 1967)

Nomenclatorial Assignment(s):

Grand Falls chert of the Boone limestone (Giles, 1935)

Grand Falls chert member of the Boone formation (Gordon, 1964)

Sub-Division(s):

None

Previous Name(s):

Part of the lower Boone Limestone / Formation of the †Osage Group (Branner, 1891; Simonds, 1891)

Part of the lower Boone Limestone / Formation (Adams and Ulrich, 1904)

Replaced By:

Part of the lower Boone Limestone / Formation. The Grand Falls Chert has been used in Arkansas on occasion, but has fallen into disuse

Formal Designation:

U.S. Geological Survey:

Grand Falls Chert Member of the Boone Formation

(uncertain)*

*The U.S. Geological Survey's National Geologic Map Database indicates the "Grand Falls Chert Member of the Boone Formation" is questionable in its current usage for Arkansas. The most recent citation is Gordon (1964).

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northwestern Arkansas; Kansas, Missouri, and Oklahoma (Wilmarth, 1938). Keroher *et al*. (1966) removed Arkansas from the list.

Type Locality:

At Grand Falls, from the bluff ½ mile west of Shoal Creek to Grand Falls, Newton County, Missouri (Winslow, 1894)

Type Section:

At Grand Falls, from the bluff ½ mile west of Shoal Creek to Grand Falls, Newton County, Missouri (Winslow, 1894)

Primary Reference Section:

Not designated

Origin of Name:

Grand Falls [waterfall], Shoal Creek, Newton County, Missouri

Original Reference:

Winslow, A., 1894, Lead and zinc deposits, section 2: Geological Survey of Missouri, v. 7, p. 417-419

†GREENLAND SANDSTONE MEMBER

Age:

Atokan Series, Pennsylvanian (Henbest, 1962)

Nomenclatorial Assignment(s):

Greenland sandstone member of the Atoka formation (Henbest, 1953)

Sub-Division(s):

None

Previous Name(s):

Part of the †Millstone Grit (Owen, 1858)

Part of the †Lower or Eastern Coal-Bearing Division (Williams, 1888)

†False Millstone Grit (Harris, 1891)

Part of the †Winslow Formation as defined by Collier (1907)

Part of the †Winslow Formation as defined by Purdue (1909a)

Replaced By:

Part of the Atoka Formation. The Greenland Sandstone was discarded

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas (Keroher *et al*., 1966)

Type Locality:

Near Greenland, Washington County, Arkansas (Henbest, 1953)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Greenland [town], Washington County, Arkansas (Henbest, 1953)

Original Reference:

Henbest, L.G., 1953, Morrow group and lower Atoka formation of Arkansas: American Association of Petroleum Geologists Bulletin, v. 37, n. 8, p. 1946-1948

†GREENWOOD SANDSTONE

Age:

Desmoinesian Series, Pennsylvanian

This is an age equivalent to the Boggy Formation (Wilmarth, 1938; Hendricks and Parks, 1950; Keroher *et al*., 1966)

Nomenclatorial Assignment(s):

Greenwood sandstone of the Sebastian Stage of the Coal Measures (Winslow *in* Stevenson, 1896)

Sub-Division(s):

None

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Collier, 1907)

Replaced By:

Lower part of Savanna Formation (Wilmarth, 1938)

Lower part of the Boggy Formation (Hendricks and Parks, 1950)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas; Oklahoma (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Greenwood [town], Sebastian County, Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Original Reference:

Winslow, A.H., *in* Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 51

HALE FORMATION

Age:

Morrowan Series, Pennsylvanian (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Hale sandstone lentil of the Morrow formation (Taff, 1905)

Hale sandstone member of the Morrow formation (Adams and Ulrich, 1905)

Hale formation of the Morrow group (Purdue, 1907b)

Hale Formation (Merewether and Haley, 1961)

Sub-Division(s):

Cane Hill Member (Henbest, 1953)

Prairie Grove Member (Henbest, 1953)

Previous Name(s):

Part of the lower †Washington Shale and Sandstone (Branner, 1891; Simonds, 1891)

Replaced By:

None. Except in the eastern regions of the Ozarks, where it is undifferentiated with the overlying Bloyd Formation / Shale. This has been named the Witts Springs Formation (Glick *et al*., 1964)

Formal Designation:

U.S. Geological Survey:	Hale Formation	(formal)
Arkansas Geological Survey:	Hale Formation	(formal)

Regional Distribution:

Northern Arkansas; Missouri and Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Hale Mountain, Washington County, Arkansas (Taff, 1905)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Hale Mountain [topographic feature], Washington County, Arkansas (Taff, 1905)

Original Reference:

Taff, J.A., 1905, Description of the Tahlequah quadrangle: U.S. Geological Survey Geologic Atlas of the United States, Tahlequah Folio, Indian Territory-Arkansas, n. 122, p. 2, 3

Adams, G.I. and Ulrich, E.O., 1905, Description of the Fayetteville quadrangle: U.S. Geological Survey Geologic Atlas of the United States, Fayetteville folio, Arkansas-Missouri, n. 119, p. 4

HARTSHORNE COAL BED

Age:

Desmoinesian Series, Pennsylvanian (Merewether and Haley, 1960)

Nomenclatorial Assignment(s):

Hartshorne coal of the Spadra shale of the McAlester group (Collier, 1907). This name has been used synonymously to the Lower Hartshorne coal bed

Sub-Division(s):

Lower Hartshorne coal bed (sometimes called the Hartshorne coal bed) (Collier, 1907)

Upper Hartshorne coal bed (Collier, 1907)

Previous Name(s):

†Intermediate Barren Division (Winslow, 1888; Collier, 1907)

†Norristown Stage of the †Coal Measures (Winslow *in* Stevenson, 1896)

Part of the upper †Winslow Formation (Collier, 1907)

Replaced By:

None

Formal Designation:

U.S. Geological Survey: lower Hartshorne coal (informal)

Arkansas Geological Survey: lower Hartshorne coal (informal)

Regional Distribution:

West-central Arkansas; Oklahoma (Merewether and Haley, 1960)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Hartshorne [town], Pittsburg County, Oklahoma or Hartshorne Sandstone

Original Reference:

Taff, J.A., 1899, Geology of the McAlester-Lehigh coal field, Indian Territory, *in* Nineteenth annual report of the United States Geological Survey, part 3, Economic geology: U.S. Geological Survey Annual Report, p. 435-437, 448-451, 452, 453, 455

HARTSHORNE SANDSTON / FORMATION

Age:

Desmoinesian Series, Pennsylvanian (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Hartshorne formation / sandstone of the McAlester group (Collier, 1907)

Hartshorne Sandstone of the Winslow Group (Branner, 1927)

Hartshorne sandstone (Miser and Stone, 1929)

Hartshorne formation (Hendricks and Read, 1934)

Hartshorne sandstone of the Krebs group (Haley, 1961)

Hartshorne sandstone formation (Branson, 1962)

Sub-Division(s):

None

Previous Name(s):

†Intermediate Barren Division (Winslow, 1888; Collier, 1907)

†Norristown Stage of the †Coal Measures (Winslow *in* Stevenson, 1896)

Upper part of the †Winslow Formation (Collier, 1907)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Hartshorne Sandstone	(formal)
Arkansas Geological Survey:	Hartshorne Sandstone	(formal)
	Hartshorne Formation	(formal, but rarely used)

Regional Distribution:

West-central Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Near Hartshorne, Pittsburg County, Oklahoma (Taff, 1899)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Hartshorne [town], Pittsburg County, Oklahoma

Original Reference:

Taff, J.A., 1899, Geology of the McAlester-Lehigh coal field, Indian Territory, *in* Nineteenth annual report of the United States Geological Survey, part 3, Economic geology: U.S. Geological Survey Annual Report, p. 436-437

†HARTWELL SANDSTONE

Age:

Desmoinesian Series, Pennsylvanian

This is an age equivalent to part of the McAlester and/or Savanna Formation (Croneis, 1930a; Wilmarth, 1938; Hendricks and Parks, 1950; Keroher *et al*., 1966)

Nomenclatorial Assignment(s):

Hartwell Sandstone of the Sebastian Stage of the Coal Measures (Winslow *in* Stevenson, 1896)

Sub-Division(s):

None

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Winslow, 1888; Collier, 1907)

Replaced By:

Part of the †Fort Smith Formation (Croneis, 1930a; Wilmarth, 1938)

Part of the McAlester Formation and/or Savanna Formation (Hendricks and Parks, 1950)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas (Keroher *et al*., 1966; Winslow *in* Stevenson, 1896)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Hartwell [town], Madison County, Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Original Reference:

Winslow, A.H., *in* Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 51

***HATTON TUFF LENTIL / MEMBER**

Age:

Chesterian Series, Mississippian (Gordon and Stone, 1977)

Nomenclatorial Assignment(s):

Hatton tuff lentil (Miser, 1920)

Hatton tuff lentil / Hatton tuff / Hatton lentil of the Stanley shale (Miser and Purdue, 1929)

Hatton Tuff Member of the Stanley Shale (Zimmerman, 1964)

Sub-Division(s):

None

Previous Name(s):

†Polk County Ash Bed (Williams, 1891a)

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Hatton Tuff Lentil of the Stanley Shale (uncertain)*

*The U.S. Geological Survey's National Geologic Map Database indicates the "Hatton Tuff Lentil of the Stanley Shale" is valid usage. However, the latest citation is Niem (1977)

Arkansas Geological Survey:	Hatton Tuff Lentil of the Stanley Shale	(formal)
	Hatton Tuff Member of the Stanley Shale	(formal)

Regional Distribution:

Southwestern Arkansas; Oklahoma (Keroher *et al*., 1966)

Type Locality:

Railroad cut of the Kansas City Southern Railway one-half mile south of Hatton, Polk County, Arkansas (Miser, 1920)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Hatton [town], Polk County, Arkansas (Miser, 1920)

Original Reference:

Miser, H.D., 1920, Mississippian tuff in the Ouachita Mountain region (abstract) *in* Proceedings of the thirty-second annual meeting of the Geological Society of America, held at Boston,

Massachusetts, December 29-31, 1919: Geological Society of America Bulletin, v. 31, n. 1, p. 125-126

†HERCULES TOWER SANDSTONE

Age:

Ibexian Series, Ordovician (Thompson, 2001)

Nomenclatorial Assignment(s):

Hercules Tower sandstone of the Lutie member of the Theodosia formation of the Jefferson City group (Cullison, 1944)

Sub-Division(s):

None

Previous Name(s):

Part of the †Yellville Limestone (Adams and Ulrich, 1904)

Part of the Cotter Dolomite / Formation (Purdue and Miser, 1916)

Replaced By:

Part of the Cotter Dolomite / Formation. Hercules Tower Sandstone was discarded

Formal Designation:

U.S. Geological Survey:	Abandoned
Arkansas Geological Survey:	Not in Use

Regional Distribution:

Northern Arkansas; Missouri (Keroher *et al*., 1966)

Type Locality:

Well exposed on Missouri Highway 125 south of Brush Creek about midway between village of Hercules and Hercules fire lookout tower, Taney County, Missouri (Cullison, 1944)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Hercules fire lookout tower, near Hercules [town], Taney County, Missouri (Cullison, 1944)

Original Reference:

Cullison, J.S., 1944, The stratigraphy of some Lower Ordovician formations of the Ozark uplift: University of Missouri School of Mines and Metallurgy Bulletin, Technical Series, v. 15, n. 2, p. 29, 31, pl. 2

HINDSVILLE LIMESTONE MEMBER

Age:

Chesterian Series, Mississippian

Nomenclatorial Assignment(s):

Hindsville Limestone Member of the Batesville Sandstone (Purdue and Miser, 1916)

Hindsville member of the Batesville formation (Caplan, 1954)

Hindsville Formation of the Mayes Group (Ogren, 1968)

Hindsville Formation (Guccione and Rieper, 1988)

Sub-Division(s):

None

Previous Name(s):

†Part of the Wyman Sandstone (the Batesville Sandstone / Formation was misattributed to the Wedington Sandstone Member of the Fayetteville Shale in early reports)

Part of the Batesville Sandstone / Formation

Replaced By:

None

Formal Designation:

U.S. Geological Survey:

Hindsville Limestone Member of the Batesville Formation (formal)

Hindsville Limestone Member of the Batesville Sandstone (formal)

Arkansas Geological Survey:

Hindsville Limestone Member of the Batesville Formation (formal)

Hindsville Formation. Proposed in 2013 (Mazzullo *et al*., 2013). As of yet, this name has not been published in any recent U.S. Geological Survey or Arkansas Geological Survey publications

Regional Distribution:

Northern Arkansas; Missouri and Oklahoma (Keroher *et al*., 1966)

Type Locality:

Near Hindsville, Madison County, Arkansas (Purdue and Miser, 1916)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Hindsville [town], Madison County, Arkansas (Purdue and Miser, 1916)

Original Reference:

Purdue, A.H. and Miser, H.D., 1916, Description of the Eureka Springs and Harrison quadrangles: U.S. Geological Survey Geologic Atlas of the United States, Eureka Springs-Harrison folio, Arkansas-Missouri, n. 202, p. 10, 12, 13, 19, 20, 21

HOT SPRINGS SANDSTONE MEMBER

Age:

Meramecian Series, Mississippian (Gordon and Stone, 1977; Wright, 2002)

Nomenclatorial Assignment(s):

Hot Springs sandstone (Purdue, 1910)

Hot Springs sandstone formation (Holbrook, 1947)

Hot Springs sandstone of the Stanley shale (Scull, 1958)

Hot Springs Sandstone Member of the Stanley Shale (Zimmerman, 1964)

Hot Spring Sandstone Member of the Stanley Formation (Haley and Stone, 1994a, f, g, i). This is a typo

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed “sandstones and shales” (Griswold, 1892)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:

Hot Springs Sandstone Member of the Stanley Shale (formal)

Arkansas Geological Survey:

Hot Springs Sandstone Member of the Stanley Shale (formal)

Regional Distribution:

Southwestern Arkansas (Keroher *et al*., 1966)

Type Locality:

Hot Springs, Garland County, Arkansas (Purdue, 1910)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Hot Springs [town], Garland County, Arkansas (Purdue, 1910)

Original Reference:

Purdue, A.H., 1910, The collecting area of the waters of the hot springs, Hot Springs, Arkansas: The Journal of Geology, v. 18, p. 282-283

†HUNTINGTON COAL BED

Age:

Desmoinesian Series, Pennsylvanian

Nomenclatorial Assignment(s):

Huntington coal (Winslow, 1888)

Huntingdon coal of the Poteau Stage (Stevenson, 1896). This is a typo

Sub-Division(s):

None

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Winslow, 1888)

†Grady coal bed (Drake, 1897; Keyes, 1901). This name is synonymous to the Huntington coal

Replaced By:

Uncertain which coal bed or formation this correlates to

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

West-central Arkansas (Winslow, 1888; Stevenson, 1896)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Huntington, Sebastian County, Arkansas

Original Reference:

Winslow, A., 1888, The geology of the coal regions; a preliminary report upon a portion of the coal regions of Arkansas: Annual Report of the Geological Survey of Arkansas for 1888, v. 3, p. 78, 80

IMO SHALE / INTERVAL

Age:

Chesterian Series, Mississippian (Hutto and Johnson, 2015b, 2015c)

Nomenclatorial Assignment(s):

Imo Formation (Gordon, 1964)

Imo Shale (Gordon and Stone, 1973)

Imo Shale of the Pitkin Formation (Hutto and Smart, 2010)

Imo Interval of the Pitkin Formation

Imo Member of the Pitkin Formation

Sub-Division(s):

None

Previous Name(s):

Lower part of the †Washington Shale and Sandstone of the †Osage Group (Branner, 1891; Simonds, 1891)

Lower part of the †Washington Shale and Sandstone of the †Morrow Formation (Adams and Ulrich, 1904)

Lower part of the Hale Formation of the †Morrow Formation (Taff, 1905)

Lower part of the Hale Formation of the †Morrow Group (Purdue, 1907b)

Lower part of the Cane Hill Member of the Hale Formation of the †Morrow Group (Henbest, 1953)

Lower part of the Cane Hill Member of the Hale Formation (Merewether and Haley, 1961)

Replaced By:

In the usage of the Arkansas Geological Survey, this unit is currently in use.

In the usage of the U.S. Geological Survey, this unit is not in use and is currently a part of the Pitkin Limestone / Formation

Formal Designation:

U.S. Geological Survey:	Not in Use	
Arkansas Geological Survey:	Imo interval	(informal)
	Imo shale	(informal)

Regional Distribution:

Northwestern Arkansas (Gordon, 1964)

Type Locality:

Sulpher Springs Hollow, SE¼ SE¼ Sec. 3, and NW¼ NW¼ Sec. 11, T. 13 N., R. 17 W., Searcy County, Arkansas (Gordon, 1964)

Type Section:

Sulpher Springs Hollow, SE¼ SE¼ Sec. 3, and NW¼ NW¼ Sec. 11, T. 13 N., R. 17 W., Searcy County, Arkansas (Gordon, 1964)

Primary Reference Section:

Not designated

Origin of Name:

Imo [town], Searcy County, Arkansas (Gordon, 1964)

Original Reference:

Gordon, M., Jr., 1964, Carboniferous cephalopods of Arkansas: U.S. Geological Survey Professional Paper, n. 460, p. 34-38

†INTERMEDIATE BARREN DIVISION

Age:

Desmoinesian Series, Pennsylvanian

This is an age equivalent to the Hartshorne Sandstone (Collier, 1907; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Intermediate Barren Division (Winslow, 1888)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

†Norristown Stage of the †Coal Measures (Winslow *in* Stevenson, 1896)

Hartshorne Sandstone of the upper †Winslow Formation (Collier, 1907)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

West-central Arkansas (Winslow, 1888)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Descriptive name for a section of strata that lack coal beds, but lie between two prominent coal bearing sections. Winslow (1888) was the first to use this name, however, various forms of this name have been previously used.

Original Reference:

Winslow, A., 1888, The geology of the coal regions; a preliminary report upon a portion of the coal regions of Arkansas: Annual Report of the Geological Survey of Arkansas for 1888, v. 3, map

†*IRONS FORK MOUNTAIN FORMATION

Age:

Morrowan Series, Pennsylvanian

This is an age equivalent to the Jackfork Sandstone / Formation (McFarland, 1998, 2004)

Nomenclatorial Assignment(s):

†Irons Fork Mountain Formation of the Jackfork Group (Morris, 1965)

Sub-Division(s):

†Prairie Hollow Member (Morris, 1965)

Previous Name(s):

Part of the unnamed "sandstones and shales" (Griswold, 1892)

Part of the lower Jackfork Group (Purdue, 1909a; Walthall, 1967)

†Irons Fork Mountain Formation. Abandoned and replaced by the Wildhorse Mountain Formation (Walthall, 1967)

†Wildhorse Mountain Formation. Abandoned and replaced by the Irons Fork Mountain Formation (Morris, 1971)

Replaced By:

Lower part of the †Wildhorse Mountain Formation of the Jackfork Group (Walthall, 1967)

†Irons Fork Mountain Formation. Reinstated this name after replacing the Wildhorse Mountain Formation (Morris, 1971)

Formal Designation:

U.S. Geological Survey: Not in use

Arkansas Geological Survey: Abandoned (uncertain)*

*Used the "Irons Fork Mountain Formation" by Jordan *et al*. (1993) in Guidebook 93-1 and Coleman *et al*. (1994) in Guidebook 94-2

Regional Distribution:

West-central Arkansas (Morris, 1971)

Type Locality:

Irons Fork Mountain, Polk County, Arkansas (Morris, 1965)

Type Section:

On Irons Fork Mountain along U.S. Forest Service Road 216, from SW¼ SE¼ Sec. 23, T. 1 S., R. 28 W., to NE¼ NE¼ Sec. 23, T. 1 S., R. 28 W., Polk County, Arkansas. Base in creek approximately 100 feet to the east of the road. (Morris, 1965, 1971)

Primary Reference Section:

Forked Mountain area, from NW¼ Sec. 4, T. 2 N., R. 19 W., to SW¼ Sec. 33, T. 3 N., R. 19 W., Saline and Perry Counties, Arkansas (Morris, 1965, 1971)

Origin of Name:

Irons Fork Mountain [topographic feature], Polk County, Arkansas (Morris, 1971)

Original Reference:

Morris, R.C., 1965, Geologic investigation of Jackfork Group of Arkansas: unpublished Ph.D. dissertation, University of Wisconsin, Madison, Wisconsin, p. 10-23, 38, 40-41, 44, 45, 47-53, 63, 66, 67, 75, 81, 82, 93, 94, 96, 98, 100, 102, 104, 138-143, 172, 176

†IZARD LIMESTONE

Age:

Whiterockian to Mohawkian Series, Ordovician (Wilmarth, 1938)

This is an age equivalent to the Joachim Limestone, Jasper Limestone Member of the Everton Formation, and the Plattin Limestone (Ulrich, 1911; Purdue and Miser, 1916; Branner, 1927; Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Izard limestone (Penrose, 1891)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

Jasper Limestone Member (Purdue and Miser, 1916), Joachim Limestone (Miser, 1921; Croneis, 1930), and Plattin Limestone (Miser, 1921; Croneis, 1930)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northern Arkansas (Keroher *et al*., 1966)

Type Locality:

Penters Bluff, Izard County, Arkansas (Wilmarth, 1938)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Izard County, Arkansas (Penrose, 1891)

Original Reference:

Penrose, R.A.F., Jr., 1891, Manganese: its uses, ores, and deposits: Annual report of the Geological Survey of Arkansas for 1890, v. 1, p. 102, 112-113, 121-124, 587-593

JACKFORK SANDSTONE / FORMATION

Age:

Morrowan Series, Pennsylvanian (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Jackfork sandstone (Purdue, 1909a)

Jackfork sandstone formation (Branner, 1932)

Jackfork Group (Morris, 1965)

Jackfork Formation (Haley *et al*., 1994a, b, d, e, f, g; Haley and Stone, 1994c, d, h, i, j, k, l, m, o, s, t, w)

Sub-Division(s):

Jackfork Sandstone / Formation:

None

Jackfork Group:

†Brushy Knob Formation (Morris, 1971)

†Game Refuge Formation (Walthall, 1967)

†Irons Fork Mountain Formation (Morris, 1971)

†Markham Mill Formation (Walthall, 1967)

†Prairie Mountain Formation (Walthall, 1967)

†Wesley Formation (Walthall, 1967)

†Wildhorse Mountain Formation (Walthall, 1967)

Previous Name(s):

Part of the unnamed "sandstones and shales" (Griswold, 1892)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Jackfork Sandstone	(formal)
Arkansas Geological Survey:	Jackfork Formation	(formal)
	Jackfork Sandstone	(formal)

Regional Distribution:

West-central Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Jackfork Mountain, Pittsburg County, Oklahoma (Taff, 1902)

Type Section:

Not designated

Primary Reference Section:

Jackfork Formation / Sandstone:

None

Jackfork Group:

Along the east side of the Indian Nations Turnpike and on Jackfork Mountain, from SW¼ SE¼ SE¼ Sec. 19, T. 1 N., R. 15 E. to NW¼ NW¼ NE¼ Sec. 19 T. 1 N., R. 15 E., Atoka County, Oklahoma (Pitt *et al*., 1982). However, this section was later considered to be inaccurate and was proposed to be discontinued as the primary reference section, but could still be used as a supplementary reference section (Suneson, 1991). Suneson (1991) proposed a primary reference section along U.S. Highway 259, south of Big Cedar, Oklahoma as described by Cline and Moretti (1956) and modified by Briggs (1973) in roadcuts on U.S. Highway 259 in Sections 23, 25, 26, 27, 32, 33, 34, T. 2 N., R. 25 E., and Sec. 5, T. 1 N., R. 25 E.

Origin of Name:

Jackfork Mountain [topographic feature], Pittsburg and Pushmataha Counties, Oklahoma (Taff, 1902)

Original Reference:

Taff, J.A., 1902, Description of the Atoka quadrangle: U.S. Geological Survey Geological Atlas of the United States, Atoka Folio, Indian Territory, n. 79, p. 4

JASPER LIMESTONE / MEMBER

Age:

Whiterockian Series, Ordovician

This is an age equivalent to part of the Everton Formation (Turner and Hudson, 2010; Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Jasper limestone (Purdue and Miser, 1916)

Jasper limestone member of the Everton formation (Wilson *et al*., 1959)

Sub-Division(s):

None

Previous Name(s):

†Izard Limestone (Penrose, 1891)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Jasper Member of the Everton Formation	(formal)
Arkansas Geological Survey:	Jasper Limestone of the Everton Formation	(formal)

Jasper Member of the Everton Formation (formal)

Regional Distribution:

Northern Arkansas (Keroher *et al*., 1966)

Type Locality:

Little Buffalo River, east of Jasper, Newton County, Arkansas (Purdue and Miser, 1916)

Type Section:

In bluff along the Little Buffalo River, ¼ mile east of Jasper, Newton County, Arkansas (Purdue and Miser, 1916)

Primary Reference Section:

Not designated

Origin of Name:

Jasper [town], Newton County, Arkansas (Purdue and Miser, 1916)

Original Reference:

Purdue, A.H. and Miser, H.D., 1916, Description of the Eureka Springs and Harrison quadrangles: U.S. Geological Survey Geologic Atlas of the United States, Eureka Springs-Harrison folio, Arkansas-Missouri, n. 202, p. 8

JEFFERSON CITY DOLOMITE

Age:

Ibexian Series, Ordovician (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Jefferson City dolomite (Branner, 1927)

Jefferson City Dolostone of the Yellville Group (Hedden, 1976)

Jefferson City group (Cullison, 1994)

Sub-Division(s):

Jefferson City Dolomite:

None

Jefferson City Group:

†Blackjack Knob Member of the Theodosia Formation (Cullison, 1944)

†Gainesville Sandstone of the Blackjack Knob Member of the Theodosia Formation (Cullison, 1944)

†Hercules Tower Sandstone of the Lutie Member of the Theodosia Formation (Cullison, 1944)

†Lutie Member of the Theodosia Formation (Cullison, 1944)

†Pocket Hollow Oolite of the Lutie Member of the Theodosia Formation (Cullison, 1944)

†Rich Mountain Formation (Cullison, 1944)

†Rockaway Conglomerate of the Lutie Member of the Theodosia Formation (Cullison, 1944)

†Roubidoux Formation (only found in subsurface of Arkansas) (Cullison, 1944)

†Theodosia Formation (Cullison, 1944)

Previous Name(s):

Jefferson City Dolomite:

Part of the †Calciferous Formation (Penrose, 1891)

Part of the †Yellville Limestone (Adams and Ulrich, 1904)

Jefferson City Group:

Part of the †Calciferous Formation (Penrose, 1891)

Part of the †Yellville Limestone (Adams and Ulrich, 1904)

Jefferson City Dolomite and the †Yellville Formation (Ulrich, 1911)

Jefferson City Dolomite and the lower part of the Cotter Dolomite / Formation (Purdue and Miser, 1916)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Jefferson City Dolomite	(formal)
Arkansas Geological Survey:	Jefferson City Dolomite	(formal)

Regional Distribution:

Northern Arkansas; Missouri (McFarland, 1998, revised 2004)

Type Locality:

Along Missouri River, in Jefferson City, Cole County, Missouri (Winslow, 1894)

Type Section (Composite):

Exposures along the Missouri River, from the mouth of the Moreau Creek on east side of Jefferson City to Gray's Creek, on north side of Jefferson City, Cole County, Missouri (Winslow, 1894)

Reference Section:

Not designated

Origin of Name:

Jefferson City [town], Cole County, Missouri (Winslow, 1894)

Original Reference:

Winslow, A., 1894, Lead and zinc deposits, section 1: Geological Survey of Missouri, v. 6, p. 331, 373, 375

†JENKINS BRANCH CHERT

Age:

Ibexian Series, Ordovician

This is an age equivalent to part of the Cotter Dolomite / Formation (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Jenkins Branch chert / chert bed of the Cotter Dolomite (Cullison, 1944)

Sub-Division(s):

None

Previous Name(s):

Part of the †Calciferous Formation (Penrose, 1891)

Part of the †Yellville Limestone (Adams and Ulrich, 1904)

Part of the Cotter Dolomite / Formation (Purdue and Miser, 1916)

Replaced By:

Part of the Cotter Dolomite / Formation. Jenkins Branch Chert was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas (Keroher *et al*., 1966)

Type Locality:

South of Jenkins Branch, NE¼ SW¼ NE¼ Sec. 7, T. 19 N., R. 15 W., Marion County, Arkansas (Cullison, 1944)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Jenkins Branch [creek] of the White River, Arkansas.

Original Reference:

Cullison, J.S., 1944, The stratigraphy of some Lower Ordovician formations of the Ozark uplift: University of Missouri School of Mines and Metallurgy Bulletin, Technical Series, v. 15, n. 2, p. 35, 39, pls. 2, 9

JOACHIM DOLOMITE

Age:

Whiterockian to Mohawkian Series, Ordovician (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Joachim limestone (Ulrich, 1911)

Joachim dolomite (McKnight, 1935)

Sub-Division(s):

None

Previous Name(s):

Part of the lower †Izard Limestone (Penrose, 1891)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Joachim Dolomite	(formal)
Arkansas Geological Survey:	Joachim Dolomite	(formal)

Regional Distribution:

Northern Arkansas; Illinois and Missouri (McFarland, 1998, revised 2004)

Type Locality:

Along Joachim Creek, Jefferson County, Missouri (Winslow, 1894)

Type Section:

Along Plattin Creek (misidentified as Joachim Creek), in NE¼ Sec. 8 and NW¼ Sec. 9, T. 40 N., R. 6 E., Jefferson County, Missouri (Winslow, 1894; corrected by Grohskopf, 1948)

Reference Sections:

Not designated

Origin of Name:

Joachim Creek [creek], Jefferson County, Missouri (Winslow, 1894; McFarland, 1998, revised 2004)

Original Reference:

Winslow, A., 1894, Lead and zinc deposits, section 1: Geological Survey of Missouri, v. 6, p. 331, 352-353

JOHNS VALLEY SHALE / FORMATION

Age:

Morrowan Series, Pennsylvanian (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

John's Valley shale (Scull, 1958)

Johns Valley shale (Freeman, 1966)

Johns' Valley Shale (Clardy and Bush, 1976)

Johns Valley Formation (Haley *et al*., 1994a, b, e, f, g; Haley and Stone, 1994j, l, t, w)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed part of the "sandstones and shales" (Griswold, 1892)

Pennsylvanian part of Caney Shale

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Johns Valley Shale (formal)

Arkansas Geological Survey:	Johns Valley Formation	(formal)
	Johns Valley Shale	(formal)

Regional Distribution:

West-central Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Johns Valley, Pushmataha County, Oklahoma (Ulrich, 1927)

Type Section:

Not designated

Primary Reference Section:

Along north-draining gulley in Jerusalem Hollow, from SW¼ NW¼ NW¼ Sec. 33, T. 1 N., R. 18 E. to Jerusalem Creek, Pushmataha County, Oklahoma (Pitt *et al*., 1982)

Origin of Name:

Johns Valley [topographic feature], Pushmataha County, Oklahoma (Ulrich, 1927)

Original Reference:

Ulrich, E.O., 1927, Fossiliferous boulders in the Ouachita "Caney" shale and the age of the shale containing them: Oklahoma Geological Survey Bulletin, n. 45, p. 6, 21-23, 30, 36-37

†KEOKUK FORMATION

Age:

Osagean Series, Mississippian (Cline, 1934)

Nomenclatorial Assignment(s):

Keokuk limestone (Keyes, 1892)

Keokuk formation / Keokuk limestone (Cline, 1934)

Keokuk limestone of the Boone limestone (Giles, 1935)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Limestone / Formation of the †Osage Group (Penrose, 1891)

Part of the Boone Limestone / Formation (Adams and Ulrich, 1904)

Replaced By:

Part of the Boone Limestone / Formation. In Arkansas, this section is informally called the "undifferentiated Burlington-Keokuk Limestone"

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas; Missouri (Cline, 1934), Iowa, Illinois, Kentucky, Missouri, and Oklahoma (Wilmarth, 1938; Huffman, 1958; Keroher *et al*., 1966)

Type Locality:

Near Keokuk (formerly Keokuck Landing), Lee County, Iowa (Owen, 1852)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Keokuck Landing [town], now called Keokuk, Lee County, Iowa (Owen, 1852)

Original Reference:

Owen, D.D., 1852, Report of a geological survey of Wisconsin, Iowa, and Minnesota; and incidentally of a portion of Nebraska Territory: Lippincott, Grambo, and Co., Philadelphia, 638 p. 91, 92

KESSLER LIMESTONE MEMBER

Age:

Morrowan Series, Pennsylvanian (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Kessler limestone of the Boston group (Branner, 1891; Simonds, 1891)

Kessler limestone member of the Morrow formation (Adams and Ulrich, 1904)

Kessler limestone lentil of the Morrow formation (Adams and Ulrich, 1905)

Kessler Limestone Member of the Bloyd Formation (Henbest, 1962)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

None

Formal Designation:

U.S. Geological Survey:

Kessler Limestone Member of the Bloyd Formation (formal)

Kessler Limestone Member of the Bloyd shale (formal)

Arkansas Geological Survey:

Kessler Limestone Member of the Bloyd Formation (formal)

Regional Distribution:

Northwestern Arkansas; Oklahoma (Keroher *et al*., 1966)

Type Locality:

Kessler Mountain, Washington County, Arkansas (Branner, 1891; Simonds, 1891)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Kessler Mountain [topographic feature], T. 16 N., R. 30 W., Washington County, Arkansas (Simonds, 1891). Name credited to Simonds (Branner, 1891)

Original Reference:

Branner, J.C., 1891, Introduction: Arkansas Geological Survey Annual Report 1888, v. 4, p. xiii

Simonds, F.W., 1891, The geology of Washington County: Arkansas Geological Survey Annual Report 1888, v. 4, p. 26, 103-105

†KEY SANDSTONE

Age:

Whiterockian Series, Ordovician

Nomenclatorial Assignment(s):

Key sandstone (Adams and Ulrich, 1904)

Sub-Division(s):

None

Previous Name(s):

†Saccharoidal sandstone (Penrose, 1892)

Replaced By:

St. Peter Sandstone (Giles, 1930)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northern Arkansas (Keroher *et al*., 1966)

Type Locality:

Key, Benton County, Arkansas (Adams and Ulrich, 1904)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Key [post office], in the valley of White River, northeast of Fayetteville, Arkansas (Adams and Ulrich, 1904). The town of Key, Benton County, Arkansas was located on the east bank of White River, near the mouth of Pine Creek, about six miles southeast of downtown Rogers, Arkansas

Original Reference:

Adams, G.I. and Ulrich, E.O., 1904, Zinc and lead deposits of northern Arkansas: U.S. Geological Survey Professional Paper, n. 24, p. 20-21, 90, 94, 95-97

KIMMSWICK LIMESTONE

Age:

Mohawkian to Cincinnatian Series, Ordovician (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Kimmswick limestone (Ulrich, 1911)

Kemmswick limestone (Branner, 1927). This is a typo

Sub-Division(s):

None

Previous Name(s):

Part of the St. Clair Limestone (Penrose, 1891)

Part of the lower †Polk Bayou Limestone (Williams, 1899)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Kimmswick Limestone	(formal)
Arkansas Geological Survey:	Kimmswick Limestone	(formal)

Regional Distribution:

Northern Arkansas; Illinois and Missouri (McFarland, 1998, revised 2004)

Type Locality:

Kimmswick, Jefferson County, Missouri (Ulrich, 1904)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Kimmswick [town], Jefferson County, Missouri (Ulrich, 1904)

Original Reference:

Ulrich, E.O., *in* Buckley, E.R. and Buehler, H.A., 1904, The quarrying industry of Missouri: Missouri Bureau of Geology and Mines, 2nd series, v. 2, p. 111

KINGS RIVER SANDSTONE MEMBER

Age:

Whiterockian Series, Ordovician

This is an age equivalent to part of the Everton Formation (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Kings River sandstone / member / sandstone member of the Everton limestone (Purdue and Miser, 1916)

King's River sandstone member of the Everton formation (Branner, 1937a)

King River Sandstone Member of the Everton Formation (Hudson and Murray, 2003). This is a typo

Sub-Division(s):

None

Previous Name(s):

Part of the Everton Formation

Replaced By:

None

Formal Designation:

U.S. Geological Survey:

Kings River Sandstone Member of the Everton Formation (formal)

Arkansas Geological Survey:

Kings River Sandstone Member of the Everton Formation (formal)

Regional Distribution:

Northwestern Arkansas (Keroher *et al*., 1966)

Type Locality:

One mile south of the mouth of Piney Creek, on the south side of point, in NW¼ Sec. 3, T. 18 N., R. 25 W., Madison County, Arkansas (Purdue and Miser, 1916)

Type Section:

One mile south of the mouth of Piney Creek, on the south side of point, in NW¼ Sec. 3, T. 18 N., R. 25 W., Madison County, Arkansas (Purdue and Miser, 1916)

Primary Reference Section:

Not designated

Origin of Name:

Kings River [river], Madison and Carroll Counties, Arkansas (Purdue and Miser, 1916)

Original Reference:

Purdue, A.H. and Miser, H.D., 1916, Description of the Eureka Springs and Harrison quadrangles: U.S. Geological Survey Geologic Atlas of the United States, Eureka Springs-Harrison folio, Arkansas-Missouri, n. 202, p. 5, 6, 7, 8, 9, 18, 20, 21

†KOGER LIMESTONE LENTIL

Age:

Chesterian Series, Mississippian

This is an age equivalent to part of the Fayetteville Shale (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Koger Limestone Lentil of the Fayetteville Formation (Taylor, 1964)

Sub-Division(s):

None

Previous Name(s):

Part of the †Marshall Shale (Branner, 1891; Simonds, 1891). This name was misattributed to the beds of the Fayetteville Shale

Part of the Fayetteville Shale (Branner, 1891; Simonds, 1891)

Replaced By:

Part of the Fayetteville Shale. Koger Limestone Lentil was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas (Taylor, 1964)

Type Locality:

Two miles northwest of Elkins, Washington County, Arkansas and two miles east of Koger Branch near the center of the north boundary of Sec. 3, T. 15 N., R. 29 W. (Taylor, 1964)

Type Section:

Not designated

Primary Reference Section:

Not formally designated. Original reference states a reference section in drainage ditch near Bench Mark 1333 along the Frisco Railroad, on Country Club Road, on South Mountain (Baxter Mountain), south of Fayetteville, NE¼ Sec. 28, T. 16 N., R. 30 W., Arkansas (Taylor, 1964)

Origin of Name:

Koger Branch of the Middle Fork of the White River [creek], Washington County, Arkansas (Taylor, 1964)

Original Reference:

Taylor, J.D., 1964, A new lentil in upper Fayetteville Formation: Arkansas Academy of Science Proceedings, v. 18, p. 64-65

†*KREBS GROUP

Age:

Desmoinesian Series, Pennsylvanian (Oakes, 1953)

Nomenclatorial Assignment(s):

Krebs group (Haley, 1961; Merewether and Haley, 1961)

Sub-Division(s):

Boggy Formation (Haley, 1961)

Hartshorne Sandstone (Haley, 1961)

McAlester Formation (Haley, 1961)

Savanna Formation (Haley, 1961)

Previous Name(s):

†Upper or Western Coal Bearing Division (Winslow, 1888)

†Norristown Stage, †Poteau Stage, †Sebastian Stage, and †Spadra Stage of the †Coal Measures Savanna Formation, †McAlester Group (including †Paris Shale, †Paris coal bed, †Fort Smith Formation, Charleston coal bed, †Tennessee Sandstone Member, †Spadra Shale, upper Hartshorne coal bed, Hartshorne coal bed), Hartshorne Sandstone (Winslow *in* Stevenson, 1896)

Hartshorne Sandstone, McAlester Formation, Savanna Formation, and Boggy Formation (Hendricks and Parks, 1950)

Replaced By:

Hartshorne Sandstone, McAlester Formation, Savanna Formation, and Boggy Formation. The Krebs Group was discarded

Formal Designation:

U.S. Geological Survey: Krebs Group (uncertain)*

*The U.S. Geological Survey's National Geologic Map Database indicates the "Krebs Group" is valid usage in Arkansas. However, the latest citation is a non-USGS publication by Merewether (1971). A USGS publication from 1981 (Hildebrand, 1981) uses this name as well.

Arkansas Geological Survey: Abandoned

Regional Distribution:

West-central Arkansas; Kansas, Missouri, and Oklahoma (Keroher et al., 1966; Haley and Hendricks, 1968)

Type Area:

Northeastern and east-central Oklahoma (Oakes, 1953)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Krebs [town], Pittsburg County, Oklahoma (Oakes, 1953)

Original Reference:

Oakes, M.C., 1953, Krebs and Cabaniss Groups of Pennsylvanian age, in Oklahoma: American Association of Petroleum Geologists Bulletin, v. 37, no. 6, p. 1523-1526

LAFFERTY LIMESTONE / FORMATION

Age:

Cayugan Series, Silurian (Cramer *et al*., 2010; Turner and Hudson, 2010)

Nomenclatorial Assignment(s):

Lafferty limestone (Miser, 1921)

Lafferty formation (Ball, 1942)

Sub-Division(s):

None

Previous Name(s):

Part of the upper St. Clair Limestone (Penrose, 1891)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Lafferty Limestone	(formal)
Arkansas Geological Survey:	Lafferty Limestone	(formal)

Regional Distribution:

Central-northern Arkansas (McFarland, 1998, revised 2004)

Type Locality:

Tate Spring, 1¼ mile north of Penters Bluff railroad station, Izard County, Arkansas (Miser, 1921)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

West Lafferty Creek [creek], northeast of Penters Bluff station, Izard County, Arkansas (Miser, 1921)

Original Reference:

Miser, H.D., 1921, Preliminary report on the deposits of manganese ore in the Batesville district, Arkansas *in* Ransome, F.L., Gale, H.S., and Burchard, E.F. (eds.), 1921, Contributions to economic geology (short papers and preliminary reports), 1920, part 1, metals and nonmetals except fuels: U.S. Geological Survey Bulletin, n. 715-G, p. 93-214, pl. 6, 7

LOWER HARTSHORNE COAL BED

Age:

Desmoinesian Series, Pennsylvanian (Merewether and Haley, 1961)

Nomenclatorial Assignment(s):

lower Hartshorne coal of the Spadra shale (Collier, 1907)

Lower Hartshorne coal / coal bed of the McAlester Formation (Haley, 1960)

Lower Hartshorne coal bed of the McAlester Formation of the Krebs Group (Haley and Hendricks, 1968)

Sub-Division(s):

None

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Winslow, 1888)

Part of the †Spadra Stage of the †Coal Measures (Winslow *in* Stevenson, 1896)

Hartshorne coal bed (Collier, 1907). This has been used as a synonymous name for the Lower Hartshorne coal bed

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Not in Use (informal)

Arkansas Geological Survey:

lower Hartshorne coal of the McAlester Formation (informal)

lower Hartshorne coal bed of the McAlester Formation (informal)

Regional Distribution:

West-central Arkansas; Oklahoma (Merewether and Haley, 1961)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Hartshorne [town], Pittsburg County, Oklahoma (Ray *in* Breckenridge, 1907)

Original Reference:

Taff, J.A. and Adams, G.I., 1900, Geology of the eastern Choctaw coal field, Indian Territory, *in* Twenty-first annual report of the United States Geological Survey, part 2, General geology, economic geology, Alaska: U.S. Geological Survey Annual Report, p. 274

†LOWER OR EASTERN COAL BEARING DIVISION

Age:

Unspecified Series to Atokan Series, Pennsylvanian

This is an age equivalent to the Atoka Formation and unspecified upper Mississippian beds (Collier, 1907; Purdue, 1909a)

Nomenclatorial Assignment(s):

Lower or Eastern Coal Bearing Division / eastern and lower coal bearing division (Winslow, 1888)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

†Appleton Stage (including †Cross Plains Sandstone, †Russellville Shale, and †Washburn Sandstone), †Booneville Stage, and the †Danville Stage of the †Coal Measures (Winslow *in* Stevenson, 1896)

Lower part of the †Winslow Formation and unspecified upper Mississippian beds (Collier, 1907)

Lower part of the Atoka Formation and unspecified older beds

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

West-central Arkansas (Winslow 1888)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Descriptive name for a section of coal bearing strata. Winslow (1888) was the first to use this name, however, various forms of this name have been previously used.

Original Reference:

Winslow, A., 1888, The geology of the coal regions; a preliminary report upon a portion of the coal regions of Arkansas: Annual Report of the Geological Survey of Arkansas for 1888, v. 3, p. 22-26, map

†LOWVILLE LIMESTONE

Age:

Mohawkian Series, Ordovician

This is an age equivalent to the Plattin Limestone (Branner, 1927; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Lowville limestone (Ulrich, 1911)

Sub-Division(s):

None

Previous Name(s):

Part of the †Izard Limestone (Penrose, 1891)

Replaced By:

Plattin Limestone (Branner, 1927)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northern Arkansas; Maryland, New York, Pennsylvania, Virginia, and Ontario, Canada (Ulrich, 1911; Keroher *et al*., 1966)

Type Locality:

Near Lowville, Lewis County, New York (Clark and Schuchert, 1899)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Lowville [town], Lewis County, New York (Clark and Schuchert, 1899)

Original Reference:

Clark, J.M. and Schuchert, 1899, The nomenclature of the New York series of geological formations: Science, new series, v. 10, p. 874-878

†LUTIE MEMBER

Age:

Ibexian Series, Ordovician (Thompson, 2001)

Nomenclatorial Assignment(s):

Lutie member of the Theodosia formation of the Jefferson City group (Cullison, 1944)

Sub-Division(s):

†Hercules Tower Sandstone (Cullison, 1944)

†Pocket Hollow Oolite (Cullison, 1944)

†Rockaway Conglomerate Beds (Cullison, 1944)

Previous Name(s):

Part of the †Yellville Limestone (Adams and Ulrich, 1904)

Part of the Cotter Dolomite / Formation (Purdue and Miser, 1916)

Replaced By:

Part of the Cotter Dolomite / Formation (Purdue and Miser, 1916)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas; Missouri (Keroher *et al*., 1966)

Type Locality:

Between Theodosia and Lutie, Sec. 19, T. 22 N., R. 16 W., Ozark County, Missouri (Cullison, 1944)

Type Section:

Between post offices of Theodosia and Lutie in Sec. 19, T. 22 N. R. 16 W., Ozark County, Missouri (Cullison, 1944)

Primary Reference Section:

Not designated

Origin of Name:

Not stated, Presumably, Lutie [town], Ozark County, Missouri

Original Reference:

Cullison, J.S., 1944, The stratigraphy of some Lower Ordovician formations of the Ozark uplift: University of Missouri School of Mines and Metallurgy Bulletin, Technical Series, v. 15, n. 2, p. 25, 27-31, pl. 2, 19

†MARCELLA FORMATION

Age:

Chesterian Series, Mississippian (Ogren, 1968)

Nomenclatorial Assignment(s):

Marcella Formation (Barnes, 1960)

Sub-Division(s):

†Wallace Creek Shale Member (Ogren, 1968)

Previous Name(s):

Part of the upper Pitkin Limestone / Formation (Ogren, 1968)

Replaced By:

Part of the upper Pitkin Limestone / Formation. Marcella Formation was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northeastern Arkansas (Ogren, 1968)

Type Locality:

Wallace Creek, near Marcella, Stone County, Arkansas (Barnes, 1960)

Type Section:

On Wallace Creek, in NW¼ Sec. 12, T. 13 N., R. 9 W., near Marcella, Stone County, Arkansas (Barnes, 1960)

Primary Reference Section:

Not designated

Origin of Name:

Marcella [town], Stone County, Arkansas (Barnes, 1960)

Original Reference:

Barnes, R.P., 1960, Stratigraphy of the Upper Mississippian and Lower Pennsylvanian strata of northern Arkansas: unpublished Masters thesis, Northwestern University, Evanston, Illinois, 122 p

†MARKHAM MILL FORMATION

Age:

Morrowan Series, Pennsylvanian

This is an age equivalent to part of the Jackfork Group (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Markham Mill Formation of the Jackfork Group (Walthall, 1967)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed “sandstones and shales” (Griswold, 1892)

Part of the Jackfork Sandstone / Formation (Purdue, 1909a)

Part of †Brushy Knob Formation of the Jackfork Group (Morris, 1965)

Replaced By:

†Brushy Knob Formation of the Jackfork Group (Morris, 1971)

Part of the Jackfork Sandstone / Formation (Purdue, 1909a)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Southwestern Arkansas; Oklahoma (Keroher *et al*., 1966; Walthall, 1967)

Type Locality:

NE¼ SW¼ Sec. 21, T. 2 S., R. 14 E., Atoka County, Oklahoma (Harlton, 1938). Harlton provided a "second type locality" along Campbell Creek in Sec. 2, T. 2 S., R. 12 E., Atoka County, Oklahoma (Harlton, 1938)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Markham Mill [saw mill], center of Sec. 21, T. 2 S., R. 14 E., Atoka County, Oklahoma (Harlton, 1938)

Original Reference:

Harlton, B.H., 1938, Stratigraphy of the Bendian of the Oklahoma salient of the Ouachita Mountains: American Association of Petroleum Geologists Bulletin, v. 22, n. 7, p. 884-886

†MARSHALL SHALE

Age:

Chesterian Series, Mississippian

This is an age equivalent to the Fayetteville Shale (Adams and Ulrich, 1904; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Marshall shale of the Boston group (Branner, 1891; Simonds, 1891)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

Fayetteville Shale (Adams and Ulrich, 1904). The Marshall Shale was misattributed to the beds of the Fayetteville Shale by Simonds (1891). Simonds (1891) also misattributed the names, Fayetteville Shale and Wyman Sandstone, to the beds of the Moorefield Shale.

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas; Oklahoma (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Marshall Mountain, east of Marshall, Searcy County, Arkansas (Branner, 1891; Simonds, 1891)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Marshall Mountain [topographic feature], east of Marshall, Searcy County, Arkansas (Branner, 1891; Simonds, 1891). Name credited to Branner (1891)

Original Reference:

Branner, J.C., 1891, Introduction: Arkansas Geological Survey Annual Report 1888, v. 4, p. xiii

Simonds, F.W., 1891, The geology of Washington County: Arkansas Geological Survey Annual Report 1888, v. 4, p. 26, 53-54

†MAYES LIMESTONE MEMBER / GROUP

Age:

Meramecian Series, Mississippian

This is an age equivalent to the lower Fayetteville Shale (Mayes Limestone) and the Batesville and Moorefield Formations (Mayes Group) (Croneis, 1930a; Ogren, 1961)

Nomenclatorial Assignment(s):

Mayes limestone member of the Fayetteville shale (Easton, 1942)

Mayes Group (Ogren, 1961)

Sub-Division(s):

Mayes Limestone Member:

None

Mayes Group:

Hindsville Formation, Batesville Sandstone, and Moorefield Formation (Ogren, 1961, 1968)

Previous Name(s):

Part of the lower Fayetteville Shale (Croneis, 1930a)

Replaced By:

Hindsville Limestone Member, Batesville Sandstone / Formation, and Moorefield Shale / Formation (Ogren, 1961, 1968)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas; Oklahoma (Keroher *et al*., 1966)

Type Locality:

Mayes Limestone Member:

On west side of Grand River, Sec. 8, T. 19 N., R. 19 E., Mayes County, Oklahoma (Snider, 1915)

Mayes Group:

Not designated

Type Section:

Mayes Limestone Member:

On west side of Grand River, Sec. 8, T. 19 N., R. 19 E., Mayes County, Oklahoma (Snider, 1915)

Mayes Group:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Mayes County, Oklahoma (Snider, 1915)

Original Reference:

Snider, L.C., 1915, Geology of a portion of northeastern Oklahoma: Oklahoma Geological Survey Bulletin, n. 24, part 1, p. 27-35

MAZARN SHALE

Age:

Ibexian to Whiterockian (?) Series, Ordovician (Kreuger, 2002; Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Mazarn shale (Miser, 1918)

Mazarn formation (Purdue and Miser, 1923)

Mazzarn Shale (Branner, 1927). This is a typo

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "shales, limestones, massive quartzose sandstones, cherty blue limestones, with gray, black, and yellow shales at the bottom" (Griswold, 1892)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Mazarn Shale	(formal)
Arkansas Geological Survey:	Mazarn Shale	(formal)

Regional Distribution:

West-central Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Mazarn Creek, Montgomery County, Arkansas (Miser, 1918)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Mazarn Creek [creek], Montgomery County, Arkansas (Miser, 1918)

Original Reference:

Miser, H.D., 1918, Manganese deposits of the Caddo Gap and De Queen quadrangles, Arkansas, *in* Ransome, F.L., Burchard, E.F., and Gale, H.S. (eds.), 1918, Contributions to economic geology (short papers and preliminary reports), 1917, part 1, Metals and nonmetals except fuels: U.S. Geological Survey Bulletin, n. 660-C, p. 68

McALESTER FORMATION

Age:

Desmoinesian Series, Pennsylvanian (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

McAlester group (Collier, 1907)

McAlester shale (Hendricks and Parks, 1950)

McAlester formation of the Krebs group (Haley, 1961)

McAlester Shale Formation (USDA Forest Service, 1979)

McAlister Formation (Haley and Stone, 1994b, p, v, z)

Sub-Division(s):

McAlester Formation:

Lower Hartshorne coal bed (McFarland, 1998, revised 2004)

Upper Hartshorne coal bed (Potts, 1987; McFarland, 1998, revised 2004)

McAlester coal bed (Taff, 1899)

McAlester Group:

†Paris Shale (Collier, 1907)

†Fort Smith Formation (Collier, 1907)

†Spadra Shale (Collier, 1907)

Lower Hartshorne coal bed (McFarland, 1998, revised 2004)

Upper Hartshorne coal bed (Potts, 1987; McFarland, 1998, revised 2004)

McAlester coal bed (Taff, 1899)

Hartshorne (Grady) coal bed (Taff, 1899)

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Collier, 1907)

Part of the †Sebastian Stage and the †Spadra Stage of the †Coal Measures

†Spadra Shale and the lower part of the †Fort Smith Formation (Winslow *in* Stevenson, 1896; Hendricks and Parks, 1950, p. 69)

Replaced By:

McAlester Formation:

None

McAlester Group:

Lower part of the Boggy Formation, McAlester Formation, and Savanna Formation (Collier, 1907; Hendricks and Parks, 1950)

Formal Designation:

U.S. Geological Survey:	McAlester Formation	(formal)
Arkansas Geological Survey:	McAlester Formation	(formal)

Regional Distribution:

West-central Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Near McAlester, Pittsburg County, Oklahoma (Taff, 1899)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, McAlester [town], Pittsburg County, Oklahoma (Morgan, 1927)

Original Reference:

Taff, J.A., 1899, Geology of the McAlester-Lehigh coal field, Indian Territory, *in* Nineteenth annual report of the United States Geological Survey, part 3, Economic geology: U.S. Geological Survey Annual Report, p. 437

McALESTER COAL BED

Age:

Desmoinesian Series, Pennsylvanian (Haley, 1960)

Nomenclatorial Assignment(s):

McAlester coal bed of the McAlester Formation of the Krebs Group (Haley and Hendricks, 1968)

Sub-Division(s):

None

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Winslow, 1888; Collier, 1907)

Part of the †Sebastian Stage and the †Spadra Stage of the †Coal Measures (Winslow *in* Stevenson, 1896)

Part of the †Spadra Shale and the lower part of the †Fort Smith Formation (Hendricks and Parks, 1950)

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey:

McAlester coal bed of the McAlester Formation (informal)

Regional Distribution:

West-central Arkansas; Oklahoma (Haley, 1960)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, McAlester [town], Pittsburg County, Oklahoma

Original Reference:

Chance, H.M., 1890, Geology of the Choctaw coal-field: Transactions of the American Institute of Mining Engineers, v. 18, p. 653-661

†MIDDLE BLOYD SANDSTONE

Age:

Morrowan Series, Pennsylvanian (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

middle Bloyd sandstone of the Bloyd Formation (Zachry and Haley, 1975)

Sub-Division(s):

None

Previous Name(s):

†False Millstone Grit (Harris, 1891). This name was misattributed to the †middle Bloyd sandstone bed

Part of the Boston Group (Branner, 1891; Simonds, 1891)

Part of the Morrow Formation (Adams and Ulrich, 1904)

†Greenland Sandstone of the Atoka Formation (Sandlin, 1968). This name was misattributed to the †middle Bloyd sandstone bed

†Delaney Sandstone Member of the Winslow Formation (Glenn, 1973)

Replaced By:

†Gaither Sandstone Member of the Bloyd Formation (Crowder, 1978)

†Gaither Mountain Sandstone Member of the Bloyd Formation (Teas, 2002)

Parthenon Sandstone Member of the Bloyd Formation (Zachry and Chandler, 2010)

Formal Designation:

U.S. Geological Survey:	middle Bloyd sandstone	(informal)
Arkansas Geological Survey:	Abandoned	

Regional Distribution:

Northwestern Arkansas (Zachry and Haley, 1975)

Type Locality:

Madison and Newton Counties, Arkansas (Zachry and Haley, 1975)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Sandstone bed in the Bloyd Formation

Original Reference:

Zachry, D.L. and Haley, B.R., 1975, Stratigraphic relationships between the Bloyd and Atoka formations (Pennsylvanian) of northern Arkansas, *in* Headrick, K.N. and Wise, O.A. (eds.), 1975, Contributions to the geology of the Arkansas Ozarks: Arkansas Geological Commission, p. 99, 103

†MILLSTONE GRIT

Age:

Atokan to Desmoinesian Series, Pennsylvanian

This is an age equivalent to the Atoka Formation (Adams and Ulrich, 1904; Collier, 1907; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Millstone grit (Owen, 1858)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

†Winslow Formation (Adams and Ulrich, 1904)

†Spadra Shale, Hartshorne Sandstone, Atoka Formation (Collier, 1907)

Atoka Formation (Purdue, 1907b)

Partially by †Greenland Sandstone Member of the Atoka Formation (Henbest, 1953)

Partially by †Zone C / Sandstone unit C of the Atoka Formation (Merewether, 1967)

Partially by †Zone P of the Atoka Formation (Haley, 1966)

Partially by †Zone S of the Atoka Formation (Merewether, 1967)

Partially by †Zone W of the Atoka Formation (Haley, 1966)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Used throughout the eastern and central United States (Wilmarth, 1938)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Derived from the conglomeratic beds that were quarried for millstones (Wilmarth, 1938)

Original Reference:

Unknown

MISSOURI MOUNTAIN SHALE / FORMATION

Age:

Niagaran to Cayugan Series, Silurian (Jusczuk, 2002)

Nomenclatorial Assignment(s):

Missouri Mountain slate (Purdue, 1909a)

Missouri Mountain shale (Purdue and Miser, 1923)

Missouri Mountain formation (Croneis, 1930)

Missouri Mountain shale formation (Branner, 1942)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "shales, limestones, massive quartzose sandstones, cherty blue limestones, with gray, black, and yellow shales at the bottom" (Griswold, 1892)

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Missouri Mountain Shale (formal)

	Missouri Mountain Formation	(uncertain)*

*The U.S. Geological Survey's National Geologic Map Database indicates the "Missouri Mountain Formation" is valid usage. However, the only citation available is McFarland (1998, revised 2004)

Arkansas Geological Survey:	Missouri Mountain Formation	(formal)
	Missouri Mountain Shale	(formal)

Regional Distribution:

West-central Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Missouri Mountains, Polk and Montgomery Counties, Arkansas (Purdue, 1909a)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Missouri Mountains [topographic feature], Polk and Montgomery Counties, Arkansas (Purdue, 1909a)

Original Reference:

Purdue, A.H., 1909a, Slates of Arkansas: Geological Survey of Arkansas, p. 30, 37

†MISSOURI MOUNTAIN FORMATION

Age:

Ulsterian Series, Devonian to Chesterian Series (?), Mississippian

This is an age equivalent to the Arkansas Novaculite and the lower part of the Stanley Shale (Miser, 1918; Jusczuk, 2002; Wright, 2002)

Nomenclatorial Assignment(s):

Missouri Mountain formation (Purdue, 1909b)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "shales, limestones, massive quartzose sandstones, cherty blue limestones, with gray, black, and yellow shales at the bottom" (Griswold, 1892)

Replaced By:

Arkansas Novaculite and †Fork Mountain Slate (Purdue, 1909a; Wilmarth, 1938)

Arkansas Novaculite and lower part of the Stanley Shale (Miser, 1918)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Southwestern Arkansas (Purdue, 1909b)

Type Area:

Ouachita Mountains in west-central Arkansas (Purdue, 1909b)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Missouri Mountains [topographic feature], Polk and Montgomery counties, Arkansas

Original Reference:

Purdue, A.H., 1909b, Structure and stratigraphy of the Ouachita Ordovician area, Arkansas, (abstract): Geological Society of America Bulletin, v. 19, p. 557

MOOREFIELD SHALE / FORMATION

Age:

Meramecian to Chesterian Series, Mississippian (Wright, 2002)

Nomenclatorial Assignment(s):

Moorefield shale (Adams and Ulrich, 1904)

Moorefield formation (Lantz, 1950)

Moorefield Formation of the Mayes Group (Ogren, 1968)

Sub-Division(s):

†Ruddell Shale Member (Saunders *et al*., 1977)

†Spring Creek Member (Saunders *et al*., 1977)

Previous Name(s):

Fayetteville Shale and Wyman Sandstone (Branner, 1891; Simonds, 1891). The names, Fayetteville Shale and Wyman Sandstone, were misattributed to the beds of the Moorefield Shale by Simonds (1891)

Replaced By:

Part of the upper Ruddell Shale (Gordon, 1944)

Formal Designation:

U.S. Geological Survey:	Moorefield Formation	(formal)
Arkansas Geological Survey:	Moorefield Formation	(formal)
	Moorefield Shale	(formal)

Regional Distribution:

Central-northern Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Near Moorefield, Independence County, Arkansas (Adams and Ulrich, 1904)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Moorefield [town], Independence County, Arkansas (Adams and Ulrich, 1904)

Original Reference:

Adams, G.I. and Ulrich, E.O., 1904, Zinc and lead deposits of northern Arkansas: U.S. Geological Survey Professional Paper, n. 24, p. 26

†MORROW FORMATION / GROUP

Age:

Morrowan Series, Pennsylvanian

This is an age equivalent to the Hale Formation and Bloyd Shale / Formation (Adams and Ulrich, 1904, 1905; McFarland, 1998, revise 2004)

Nomenclatorial Assignment(s):

Morrow formation (Adams and Ulrich, 1904)

Morrow group (Purdue, 1907b)

Sub-Division(s):

Morrow Formation:

Brentwood Limestone Member (Adams and Ulrich, 1904)

Hale Sandstone Lentil / Member (Adams and Ulrich, 1904)

Kessler Limestone Member (Adams and Ulrich, 1904)

Morrow Group:

Bloyd Shale (Purdue, 1907)

Brentwood Limestone Lentil / Member of the Bloyd Shale (Purdue, 1907)

Hale Formation (Purdue, 1907)

Previous Name(s):

Part of the upper †Boston Group (Branner, 1891; Simonds, 1891)

Replaced By:

Bloyd Formation and Hale Formation (Henbest, 1962)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas (Adams and Ulrich, 1904)

Type Locality:

Morrow Formation: Morrow, Washington County, Arkansas (Adams and Ulrich, 1905)

Morrow Group: South of Fayetteville, Arkansas, along U.S. Highway 71 (Lantz, 1952)

Type Section:

Morrow Formation: Not designated

Morrow Group: Not designated

Primary Reference Section:

Morrow Formation: Not designated

Morrow Group: Not designated

Origin of Name:

Morrow [post office], Washington County, Arkansas (Adams and Ulrich, 1905)

Original Reference:

Adams, G.I. and Ulrich, E.O., 1904, Zinc and lead deposits of northern Arkansas: U.S. Geological Survey Professional Paper, n. 24, p. 28, 109-113

†*MOYERS MEMBER

Age:

Chesterian Series, Mississippian (Cohee and Wright, 1976)

Nomenclatorial Assignment(s):

Moyers Formation of the Stanley Group (Walthall, 1967)

Sub-Division(s):

†Gap Ridge Sandstone Member (Stearn, 1935)

†Parker Hill Sandstone Member (Stearn, 1935)

Previous Name(s):

Part of the unnamed "sandstones and shales" (Griswold, 1892)

Replaced By:

Part of the Stanley Shale / Formation

Formal Designation:

U.S. Geological Survey: Moyers Member of the Stanley Shale (uncertain)*

*The U.S. Geological Survey's National Geologic Map Database indicates the "Moyers Member of the Stanley Shale" is valid usage in Arkansas. However, the latest citation is a non-USGS publication by Niem (1977)

Arkansas Geological Survey: Abandoned

Regional Distribution:

Southwestern Arkansas; Oklahoma (Walthall, 1967)

Type Localities:

At, and north of, Moyers, T. 2 S., R. 16 E., Pushmataha County, Oklahoma (Harlton, 1938). Harlton also selected a "second type locality" at Prairie Mountain, Sec. 26, T. 1 S., R. 12 E., Atoka County, Oklahoma (Harlton, 1938)

Type Section:

At, and north of, Moyers, T. 2 S., R. 16 E., Pushmataha County, Oklahoma (Harlton, 1938)

Primary Reference Section:

In gully along escarpment slope of ridge, Sec. 15 T. 2 S., R. 15 E., Pushmataha County, Oklahoma (Pitt *et al*., 1982)

Origin of Name:

Not stated. Presumably, Moyers [town], Pushmataha County, Oklahoma (Harlton, 1938)

Original Reference:

Harlton, B.H., 1938, Stratigraphy of the Bendian of the Oklahoma salient of the Ouachita Mountains: American Association of Petroleum Geologists Bulletin, v. 22, n. 7, p. 853, 854, 856, 870-874, 880

NEWTON SANDSTONE MEMBER

Age:

Whiterockian Series, Ordovician

This is an age equivalent to part of the Everton Formation (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Newton sandstone member of the Everton formation (McKnight, 1935)

Sub-Division(s):

None

Previous Name(s):

Part of the †Saccharoidal Sandstone (Penrose, 1892)

Part of the †Key Sandstone (Adams and Ulrich, 1904)

St. Peter Sandstone (McKnight, 1935)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:

Newton Sandstone Member of the Everton Formation (formal)

Arkansas Geological Survey:

Newton Sandstone Member of the Everton Formation (formal)

Regional Distribution:

Northern Arkansas (Keroher *et al*., 1966)

Type Area:

Newton County, Arkansas (McKnight, 1935)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Newton County, Arkansas (McKnight, 1935)

Original Reference:

McKnight, E.T., 1935, Zinc and lead deposits of northern Arkansas: U.S. Geological Survey Bulletin, n. 853, p. 33, 36-39, 40, 41, 42, 170

†NOEL SHALE

Age:

Senecan Series, Devonian

This is an age equivalent to the Chattanooga Shale (Jusczuk, 2002)

Nomenclatorial Assignment(s):

Noel shale (Adams and Ulrich, 1904)

Sub-Division(s):

None

Previous Name(s):

†Eureka Shale (Adams and Ulrich, 1904)

Replaced By:

Chattanooga Shale / Formation (Adams and Ulrich, 1905)

Formal Designation:

U.S. Geological Survey:	Abandoned
Arkansas Geological Survey:	Abandoned

Regional Distribution:

Northwestern Arkansas; Missouri and Oklahoma (Keroher *et al*., 1966)

Type Locality:

Near Noel, McDonald County, Missouri (Adams and Ulrich, 1904)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated in original reference. Noel [town], McDonald County, Missouri (Adams and Ulrich, 1904)

Original Reference:

Taff, J.A., 1903, Description of the Tishomingo Folio: U.S. Geological Survey Geologic Atlas of the United States, Tishomingo Folio, Indian Territory, n. 98, p. 4, 5

†NORRISTOWN STAGE

Age:

Desmoinesian Series, Pennsylvanian

This is an age equivalent to the Hartshorne Sandstone (Wilmarth, 1938; Merewether and Haley, 1961; Keroher *et al*., 1966)

Nomenclatorial Assignment(s):

Norristown Stage of the Coal Measures (Winslow and Chance *in* Stevenson, 1896)

Sub-Division(s):

None

Previous Name(s):

Uncertain. Possibly part of the †Lower or Eastern Coal Bearing Division or †Intermediate Barren Division (Winslow, 1888)

Replaced By:

Hartshorne Sandstone (Wilmarth, 1938)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas; Oklahoma (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Norristown [town], Pope County, Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Original Reference:

Winslow, A.H., *in* Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 51-52

Chance, H.M., *in* Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 52

NORTHVIEW SHALE

Age:

Kinderhookian Series, Mississippian (Mazzullo *et al*., 2013)

Nomenclatorial Assignment(s):

Northview Formation (Thompson and Fellows, 1969)

Northview Member of the St. Joe Limestone (Manger and Shanks, 1976)

Northview Member of the St. Joe Formation (Shelby, 1986)

Northview Formation of the St. Joe Group (Mazzullo *et al*., 2013)

Northview Shale of the St. Joe Limestone (McGilvery *et al*., 2016)

Sub-Division(s):

†Baird Mountain Limestone Member (Thompson and Fellows, 1969)

Previous Name(s):

Part of the Boone Chert and Limestone of the †Osage Group (Branner, 1891; Simonds, 1891)

Part of the St. Joe Marble of the Boone Chert of the †Osage Group (Hopkins, 1893)

Part of the St. Joe Member of the Boone Formation (Adams and Ulrich, 1904)

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Northview of the St. Joe Formation (informal)

Northview Formation of the St. Joe Group. Proposed in 2013 (Mazzullo *et al*., 2013). As of yet, this name has not been published in any U.S. Geological Survey or Arkansas Geological Survey publications

Regional Distribution:

Northwestern Arkansas; Kansas, Missouri, and Oklahoma (Mazzullo *et al*., 2013)

Type Locality:

Near Northview, Webster County, Missouri (Weller, 1901)

Type Section:

Not designated

Primary Reference Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Northview [town], Webster County, Missouri (Weller, 1901)

Original Reference:

Weller, S., 1901, Correlation of the Kinderhook formations of southwestern Missouri: The Journal of Geology, v. 9, p. 131, 132, 140-144, 147

†OSAGE GROUP

Age:

Osagean to Chesterian Series, Mississippian

This is an age equivalent to the Batesville, Moorefield, and Boone Formations (Adams and Ulrich, 1904; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Osage group (Branner, 1891; Simonds, 1891)

Sub-Division(s):

Batesville Sandstone (Branner, 1891)

Fayetteville Shale (Branner, 1891)

†Wyman Sandstone (Branner, 1891)

Boone Chert and Limestone (Branner, 1891)

St. Joe Marble of the Boone Chert (Hopkins, 1893)

Previous Name(s):

†Genevieve Group (Williams, 1891b). This name is synonymous with the Osage Group

Replaced By:

None. The group name was abandoned, but the formation names continued to be in use

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas; Missouri (Williams, 1891b)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated

Original Reference:

Williams, H.S., 1891b, Correlation papers, Devonian and Carboniferous: U.S. Geological Survey Bulletin, n. 80, p. 169, 172

†OUACHITA SHALE

Age:

Ibexian to Whiterockian Series, Ordovician

This is an equivalent to part of the Mazarn Shale, Blakely Sandstone, and part of the Womble Shale (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Ouachita shale (Purdue, 1909a)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "shales, limestones, massive quartzose sandstones, cherty blue limestones, with gray, black, and yellow shales at the bottom" (Griswold, 1892)

Part of the Caddo Shale (Purdue, 1909b)

Replaced By:

Lower part replaced by Mazarn Shale. Middle part replaced by Blakely Sandstone. Upper part (with †Stringtown Shale) replaced by Womble Shale. (Miser, 1918)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Southwestern Arkansas (Keroher *et al*., 1966)

Type Locality:

Area north of the Missouri and Caddo Mountains and west of the Crystal Mountains, Ouachita Mountains, central Arkansas (Purdue, 1909a)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Ouachita Mountains [topographic feature], Arkansas (Purdue, 1909a)

Original Reference:

Purdue, A.H., 1909a, Slates of Arkansas: Geological Survey of Arkansas, p. 30, 33

†OZARK SANDSTONE

Age:

Desmoinesian Series, Pennsylvanian

This is an age equivalent to part of the McAlester and/or Savanna Formations (Croneis, 1930a; Wilmarth, 1938; Hendricks and Parks, 1950; Keroher *et al*., 1966)

Nomenclatorial Assignment(s):

Ozark sandstone of the Sebastian Stage of the Coal Measures (Winslow *in* Stevenson, 1896)

Sub-Division(s):

None

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Collier, 1907)

Replaced By:

Part of the †Fort Smith Formation (Croneis, 1930a)

Part of the McAlester Formation and/or Savanna Formation (Hendricks and Parks, 1950)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Ozark [town], Franklin County, Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Original Reference:

Winslow, A.H., *in* Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 51

PARIS COAL BED

Age:

Desmoinesian Series, Pennsylvanian (Haley, 1960)

Nomenclatorial Assignment(s):

Paris coal / coal bed of the Paris shale (Collier, 1907)

Paris coal seam (Gibson, 1936)

Paris coal / coal bed of the Savanna formation (Hendricks *et al*., 1936)

Sub-Division(s):

None

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Winslow, 1888)

Part of the †Sebastian Stage of the †Coal Measures (Possibly part of the †Tomlinson Shale)

(Winslow *in* Stevenson, 1896)

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Paris coal bed of the Savanna Formation (informal)

Arkansas Geological Survey:	Paris coal of the Savanna Formation	(informal)
	Paris coal bed of the Savanna Formation	(informal)

Regional Distribution:

West-central Arkansas (Collier, 1907)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Paris [town], Logan County, Arkansas (Collier, 1907)

Original Reference:

Collier, A.J., 1907, The Arkansas coal field: U.S. Geological Survey Bulletin, n. 326, p. 21, 24, 28, 49, 80-81, 85 (fig. 28), 87 (fig. 29), 93.

†PARIS SHALE

Age:

Desmoinesian Series, Pennsylvanian

This is an age equivalent to part of the Savanna Formation (Hendricks *et al*., 1936)

Nomenclatorial Assignment(s):

Paris Shale of the McAlester Group (Collier, 1907)

Sub-Division(s):

Paris coal bed (Collier, 1907)

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Winslow, 1888; Collier, 1907)

Part of the †Sebastian Stage of the †Coal Measures (Possibly part of the †Tomlinson Shale) (Winslow *in* Stevenson, 1896)

Replaced By:

Lower part of the Savanna Formation (Hendricks *et al*., 1936)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Near Paris, Logan County, and south of Charleston, at Potato Hill, Franklin County, Arkansas (Collier, 1907)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Paris [town], Logan County, Arkansas (Collier, 1907)

Original Reference:

Collier, A.J., 1907, The Arkansas coal field: U.S. Geological Survey Bulletin, n. 326, p. 12-13, 20-21

†PARKER HILL SANDSTONE MEMBER

Age:

Meramecian and/or Chesterian Series, Mississippian

This is an age equivalent to part of the Stanley Shale (Wright, 2002)

Nomenclatorial Assignment(s):

Parker Hill member of the Stanley shale (Stearn, 1935)

Parker Hill Sandstone Member of the Moyers Formation of the Stanley Group (Walthall, 1967)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed “sandstones and shales” (Griswold, 1892)

Replaced By:

Part of the Stanley Shale / Formation

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Southwestern Arkansas (Keroher *et al*., 1966)

Type Locality:

Parker Hill Mine, Sec. 1, T. 7 S., R. 26 W., Pike County, Arkansas (Stearn, 1935). Now underwater in Lake Greeson (Walthall, 1967)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Parker Hill Mine, [mine], in SE¼ SW¼ Sec. 1, T. 7 S., R. 26 W., Pike County, Arkansas (Stearn, 1935)

Original Reference:

Stearn, N.H., *in* Hansell, J.M. and Reed, J.C., 1935, Quicksilver deposits near Little Missouri River, discussion: Transactions of the American Institute of Mining and Metallurgical Engineers, v. 115, p. 245

PARTHENON SANDSTONE MEMBER

Age:

Morrowan Series, Pennsylvanian (Chandler and Zachry, 2010)

Nomenclatorial Assignment(s):

Parthenon Sandstone Member of the Bloyd Formation (Chandler and Zachry, 2010)

Sub-Division(s):

None

Previous Name(s):

†False Millstone Grit (Harris, 1891) (misattributed)

†Greenland Sandstone Member of the Atoka Formation (Sandlin, 1968) (misattributed)

†Delaney Sandstone Member of the †Winslow Formation (Glenn, 1973)

†middle Bloyd sandstone of the Bloyd Formation (Chandler and Zachry, 2010)

†Gaither Sandstone Member of the Bloyd Formation (Crowder, 1982)

†Gaither Mountain Sandstone Member of the Bloyd Formation (Teas, 2002)

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey:

Parthenon Sandstone Member of the Bloyd Formation (formal)

Parthenon Sandstone Member of the Bloyd Formation. Proposed in 2010 (Zachry and Chandler, 2010). As of yet, this name has not been published in any U.S. Geological Survey publication.

Regional Distribution:

Northern Arkansas (Chandler and Zachry, 2010)

Type Area:

Washington County, Arkansas (Chandler and Zachry, 2010)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Parthenon [town], Newton County, Arkansas (Chandler and Zachry, 2010)

Original Reference:

Chandler, A. and Zachry, D.L., 2010, Parthenon Sandstone: a prominent new member of the Morrowan Bloyd Formation, Pennsylvanian of north-central Arkansas (abstract): Geological Society of America Abstracts with Programs, v. 42, n. 2, p. 70

PENTERS CHERT

Age:

Ulsterian Series, Devonian (Jusczuk, 2002)

Nomenclatorial Assignment(s):

Penters chert (Miser, 1921)

Penters Chert Formation (Wise and Caplan, 1979)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Chert (Penrose, 1893)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Penters Chert	(formal)
Arkansas Geological Survey:	Penters Chert	(formal)

Regional Distribution:

Central-northern Arkansas (McFarland, 1998, revised 2004)

Type Locality:

Near Penters Bluff railroad station and Pfeiffer, Izard County, Arkansas (Miser, 1921)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Penters Bluff [railroad station], Izard County, Arkansas (Miser, 1921)

Original Reference:

Miser, H.D., 1921, Preliminary report on the deposits of manganese ore in the Batesville district, Arkansas *in* Ransome, F.L., Gale, H.S., and Burchard, E.F. (eds.), 1921, Contributions to economic geology (short papers and preliminary reports), 1920, part 1, metals and nonmetals except fuels: U.S. Geological Survey Bulletin, n. 715-G, p. 98, pls. 6, 7

†PENTREMITAL LIMESTONE

Age:

Morrowan Series, Pennsylvanian

This is an age equivalent to the Brentwood Limestone Member (Adams and Ulrich, 1904; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Pentremital limestone of the Boston group (Owen, 1858)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

Brentwood Limestone Member of the Morrow Formation (Adams and Ulrich, 1904)

Brentwood Limestone Member of the Bloyd Formation / Shale (Purdue, 1907b)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas (Wilmarth, 1938)

Uncertain on the full distribution. This name is known to have been used in Northwestern Arkansas (Owen, 1860), Indiana (Owen, 1838), Iowa (Hall, 1858), and Kentucky (Owen, 1857)

Type Area:

Indiana (Owen, 1838)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

The blastoid fossil *Pentremites* found within the unit (Adams and Ulrich, 1904)

Original Reference:

Owen, D.D., 1838, Report of a geological reconnoisance of the state of Indiana; made in the year 1837: J. W. Osborn and J.S. Willetts, Indianapolis, 34 p

†PEYTON CREEK BEDS / SHALE

Age:

Chesterian Series, Mississippian (Keroher, 1970)

Nomenclatorial Assignment(s):

Peyton Creek beds (McCaleb *et al*., 1964)

Peyton Creek shale (Furnish *et al*., 1964)

Peyton Creek Beds / Peyton Creek Shale of the Pitkin Formation (Keroher, 1970)

Sub-Division(s):

None

Previous Name(s):

Part of the Pitkin Limestone / Formation (Adams and Ulrich, 1904)

Replaced By:

Part of the Pitkin Limestone / Formation. Peyton Creek Beds / Shale was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas (Keroher, 1970)

Type Locality:

Near Peyton Creek, south of Leslie, Searcy County, Arkansas (McCaleb *et al*., 1964)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Peyton Creek [creek], Van Buren County, Arkansas or Peyton Creek Phosphate Mine, Van Buren County, Arkansas

Original Reference:

McCaleb, J.A., Quinn, J.H., and Furnish, W.M., 1964, The ammonoid family Girtyoceratidae in the southern midcontinent: Oklahoma Geological Survey Circular, n. 67, p. 7, 10

†PHILPOTT COAL BED

Age:

Desmoinesian Series, Pennsylvanian (Haley, 1960)

Nomenclatorial Assignment(s):

Philpott coal / coal bed of the Upper or Western Coal Bearing Division (Winslow, 1888)

Philpott coal of the (possibly) Fort Smith Formation of the McAlester Group (Collier, 1907)

Philpot seam (Gibson, 1936). This is a typo

Philpott seam / coal of the Savanna Formation (McRae, 1950)

Sub-Division(s):

Lower Philpott seam / coal (McRae, 1950)

Upper Philpott seam / coal (McRae, 1950)

Previous Name(s):

†Upper or Western Coal Bearing Division (Winslow, 1888)

Part of the †Sebastian Stage of the †Coal Measures (Winslow *in* Stevenson, 1896)

†Sky vein, †Coal Ridge vein, and other local "vein" names not listed (Collier, 1907)

Replaced By:

Charleston coal bed (Haley, 1960)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

West-central Arkansas (Winslow, 1888)

Type Locality:

Philpott coal mine, NE¼ Sec. 20, T. 10 N., R. 25 W., Johnson County, Arkansas (Winslow, 1888)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Philpott coal mine, NE¼ Sec. 20, T. 10 N., R. 25 W., Johnson County, Arkansas (Winslow, 1888)

Original Reference:

Winslow, A., 1888, The geology of the coal regions; a preliminary report upon a portion of the coal regions of Arkansas: Annual Report of the Geological Survey of Arkansas for 1888, v. 3, p. 34, 39, 80

†PICKARTZ COAL BED

Age:

Desmoinesian Series, Pennsylvanian

This is an age equivalent to part of the McAlester Formation (Collier, 1907; Hendricks and Parks, 1950)

Nomenclatorial Assignment(s):

Pickartz coal / Pickartz's coal of the Upper or Western Coal Bearing Division (Winslow, 1888)

Pickartz coal bed of (possibly) the Spadra Shale of the McAlester Group (Collier, 1907)

Sub-Division(s):

None

Previous Name(s):

†Upper or Western Coal Bearing Division (Winslow, 1888)

Part of the †Spadra Stage of the †Coal Measures (Winslow *in* Stevenson, 1896)

Replaced By:

Lower part of the McAlester Formation (Hendricks and Parks, 1950)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

West-central Arkansas (Winslow, 1888)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Pickartz mine, Franklin County, Arkansas. However, two locations of this mine are noted: Collier (1907) writes, Sec. 24, T. 10 N., R. 26 W., and a map by Winslow (1888) shows the mine at SW¼ Sec. 26, T. 10 N., R. 26 W.

Original Reference:

Winslow, A., 1888, The geology of the coal regions; a preliminary report upon a portion of the coal regions of Arkansas: Annual Report of the Geological Survey of Arkansas for 1888, v. 3, p. 51, 80, map

PIERSON LIMESTONE / FORMATION

Age:

Osagean Series, Mississippian (Manger and Shelby, 2000)

Nomenclatorial Assignment(s):

Pierson Formation (Thompson and Fellows, 1969)

Pierson Member of the St. Joe Limestone (Manger and Shanks, 1976)

Pierson Member of the St. Joe Formation (Shelby, 1986)

Pierson Formation of the St. Joe Group (Mazzullo *et al*., 2013)

Pierson Limestone of the St. Joe Limestone (McGilvery *et al*., 2016)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Chert and Limestone of the †Osage Group (Branner, 1891; Simonds, 1891)

Part of the St. Joe Marble of the Boone Chert of the †Osage Group (Hopkins, 1893)

Part of the St. Joe Member of the Boone Formation (Adams and Ulrich, 1904)

Replaced By:

None

Formal Designation:

U.S. Geological Survey	Not in Use	
Arkansas Geological Survey:	Pierson of the St. Joe Formation	(informal)

Pierson Formation of the St. Joe Group. Proposed in 2013 (Mazzullo *et al*., 2013). As of yet, this name has not been published in any U.S. Geological Survey or Arkansas Geological Survey publications

Regional Distribution:

Northwestern Arkansas; Missouri and Oklahoma (Mazzullo *et al*., 2013)

Type Locality:

Near the old zinc mines along Pierson Creek, Greene County, Missouri (Weller, 1901)

Type Section:

Roadcut on north side of County Road D, just east of bridge over the James River, near Turner Station, in NE¼ SW¼ SW¼ Sec. 29, T. 29 N., R. 20 W., Greene County, Missouri (Beveridge and Clark, 1952)

Reference Sections:

Not designated

Origin of Name:

Not stated. Presumably, Pierson Creek (also known as Pearson Creek) [creek], Greene County, Missouri (Weller, 1901; Thompson, 1986)

Original Reference:

Weller, S., 1901, Correlation of the Kinderhook formations of southwestern Missouri: The Journal of Geology, v. 9, p. 131, 144-147

PINEVILLE TRIPOLITE FACIES

Age:

Osagean Series, Mississippian (Mazzullo *et al*., 2011)

Nomenclatorial Assignment(s):

Pineville tripolite facies of the Reeds Spring Formation of the Boone Group (Mazzullo *et al*., 2011)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Pineville tripolite facies of the Reeds Spring Formation of the Boone Group. Proposed in 2011 (Mazzullo *et al*., 2011). As of yet, this name has not been published in any U.S. Geological Survey or Arkansas Geological Survey publications

Regional Distribution:

Northwestern Arkansas; Missouri and Oklahoma (Mazzullo *et al*., 2013)

Type Locality:

Not designated

Type Section:

Not designated

Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Pineville [town], McDonald County, Missouri

Original Reference:

Mazzullo, S.J., Wilhite, B.W., Boardman, D.R., II, 2011, Lithostratigraphic architecture of the Mississippian Reeds Spring Formation (middle Osagean) in southwest Missouri, northwest

Arkansas, and northeast Oklahoma: outcrop analog of subsurface petroleum reservoirs: Oklahoma City Geological Society Shale Shaker, v. 61, n. 5, p. 258

PITKIN LIMESTONE / FORMATION

Age:

Chesterian Series, Mississippian (Wright, 2002)

Nomenclatorial Assignment(s):

Pitkin limestone (Adams and Ulrich, 1904)

Pitkin formation (Easton, 1942)

Sub-Division(s):

Imo Interval / Shale (Gordon, 1964)

Pitkin Limestone of the Pitkin Limestone / Formation (Adams and Ulrich, 1904)

Previous Name(s):

†Archimedes Limestone (Owen, 1858)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Pitkin Limestone	(formal)
Arkansas Geological Survey:	Pitkin Formation	(formal)
	Pitkin Limestone of the Pitkin Formation	(informal)

Regional Distribution:

Northern Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

North of the town of Pitkin (now known as Woolsey), Washington County, Arkansas (Gordon, 1964)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Pitkin [post office], Washington County, Arkansas (Adams and Ulrich, 1904)

Original Reference:

Adams, G.I. and Ulrich, E.O., 1904, Zinc and lead deposits of northern Arkansas: U.S. Geological Survey Professional Paper, n. 24, p. 27, 109

PLATTIN LIMESTONE

Age:

Mohawkian Series, Ordovician (Ethington *et al.*, 2012)

Nomenclatorial Assignment(s):

Plattin Limestone (Branner, 1927)

Sub-Division(s):

None

Previous Name(s):

Lower part of the †Izard Limestone (Penrose, 1891)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Plattin Limestone	(formal)
Arkansas Geological Survey:	Plattin Limestone	(formal)

Regional Distribution:

Central-northern Arkansas; Illinois and Missouri (McFarland, 1998, revised 2004)

Type Locality:

Mouth of Plattin Creek at the Mississippi River, Jefferson County, Missouri (Ulrich *in* Buckley and Buehler, 1904)

Type Section:

Not designated

Reference Sections:

Not designated

Origin of Name:

Plattin Creek [creek], Jefferson County, Missouri (Adams and Ulrich, 1904)

Original Reference:

Ulrich, E.O., *in* Buckley, E.R. and Buehler, H.A., 1904, The quarrying industry of Missouri: Missouri Bureau of Geology and Mines, 2nd series, v. 2, p. 111, 280

†POCKET HOLLOW OOLITE

Age:

Ibexian Series, Ordovician (Thompson, 2001)

Nomenclatorial Assignment(s):

Pocket Hollow oölite / oölite bed of the Lutie member of the Theodosia formation of the Jefferson City group (Cullison, 1944)

Sub-Division(s):

None

Previous Name(s):

Part of the †Yellville Limestone (Adams and Ulrich, 1904)

Part of the Cotter Dolomite / Formation (Purdue and Miser, 1916)

Replaced By:

Part of the Cotter Dolomite / Formation (Purdue and Miser, 1916)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas; Missouri (Keroher *et al*., 1966)

Type Locality:

Well exposed at the bottom of South Pocket Hollow in SE¼ Sec. 29, T. 22 N., R. 14 W., Ozark County, Missouri (Cullison, 1944)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

South Pocket Hollow [topographic feature], Sec. 29, T. 22 N., R. 14 W., Ozark County, Missouri (Cullison, 1944)

Original Reference:

Cullison, J.S., 1944, The stratigraphy of some Lower Ordovician formations of the Ozark uplift: University of Missouri School of Mines and Metallurgy Bulletin, Technical Series, v. 15, n. 2, p. 27, 31, 32, pl. 2

†POLK BAYOU LIMESTONE

Age:

Mohawkian to Cincinnatian Series, Ordovician

This is an age equivalent to the Kimmswick Limestone and Fernvale Limestone (Ulrich, 1911; Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Polk Bayou limestone (Williams, 1899)

Sub-Division(s):

None

Previous Name(s):

St. Clair Limestone (Penrose, 1891)

Replaced By:

Lower part replaced by the Kimmswick Limestone and the upper part replaced by Fernvale Limestone Formation (Ulrich, 1911)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northern Arkansas (Keroher *et al*., 1966)

Type Locality:

Polk Bayou, near Batesville, Independence County, Arkansas (Williams, 1899)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Polk Bayou, near Batesville, Independence County, Arkansas (Williams, 1899)

Original Reference:

Williams, H.S., 1899, The Devonian interval in northern Arkansas: American Journal of Science, 4th series, v. 8, p. 139-152

†POLK COUNTY ASH BED

Age:

Chesterian Series, Mississippian (Gordon and Stone, 1977)

Nomenclatorial Assignment(s):

Polk County Ash-bed (Williams, 1891a)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

Hatton Tuff Lentil / Member (Miser, 1920)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Southwestern Arkansas (Keroher *et al*., 1966)

Type Locality:

SE¼ NW¼ Sec. 1, T. 5 S., R. 32 W., Polk County, Arkansas (Williams, 1891a)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Polk County, Arkansas (Williams, 1891a)

Original Reference:

Williams, J.F., 1891a, The igneous rocks of Arkansas: Annual Report of the Geological Survey of Arkansas for 1890, v. 2, p. 375-376

POLK CREEK SHALE / FORMATION

Age:

Cincinnatian Series, Ordovician (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Polk Creek shale (Purdue, 1909b)

Polk Creek formation (Purdue and Miser, 1923)

Polk Creek shale formation (Branner, 1942)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "shales, limestones, massive quartzose sandstones, cherty blue limestones, with gray, black, and yellow shales at the bottom" (Griswold, 1892)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Polk Creek Shale	(formal)
	Polk Creek Formation	(uncertain)*

*The U.S. Geological Survey's National Geologic Map Database indicates the "Polk Creek Formation" is valid usage. However, the only citation available is McFarland (1998)

Arkansas Geological Survey:	Polk Creek Formation	(formal)
	Polk Creek Shale	(formal)

Regional Distribution:

West-central Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Polk Creek, Montgomery County, Arkansas (Purdue, 1909a)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Polk Creek [creek], Montgomery County, Arkansas (Purdue, 1909a)

Original Reference:

Purdue, A.H., 1909a, Slates of Arkansas: Geological Survey of Arkansas, p. 30, 36

Purdue, A.H., 1909b, Structure and stratigraphy of the Ouachita Ordovician area, Arkansas, (abstract): Geological Society of America Bulletin, v. 19, p. 557

†POTEAU SHALE

Age:

Unknown Series, Pennsylvanian (Keroher *et al*., 1966)

Nomenclatorial Assignment(s):

Poteau shale of the Poteau Stage of the Coal Measures (Winslow *in* Stevenson, 1896)

Poteau formation (Keyes, 1901)

Sub-Division(s):

None

Previous Name(s):

Upper part of the †Upper or Western Coal Bearing Division (Collier, 1907)

Replaced By:

Part of the Savanna Formation (Collier, 1907)

Part of the Boggy Formation (Hendricks and Parks, 1950)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

West-central Arkansas (Winslow *in* Stevenson, 1896)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Poteau Mountains [topographic feature], Le Flore County, Oklahoma, and Sebastian County, Arkansas (Wilmarth, 1938)

Original Reference:

Winslow, A.H., *in* Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 51

†POTEAU STAGE

Age:

Desmoinesian Series, Pennsylvanian

This is an age equivalent to part of the Boggy Formation (Collier, 1907; Wilmarth, 1938; Hendricks and Parks, 1950; Keroher *et al*., 1966)

Nomenclatorial Assignment(s):

Poteau Stage of the Coal Measures (Winslow and Chance *in* Stevenson, 1896)

Sub-Division(s):

Huntington coal bed (Winslow, 1888)

†Poteau Shale (Winslow, 1896)

Previous Name(s):

Part of the upper †Upper or Western Coal Bearing Division (Collier, 1907)

Replaced By:

Part of the Savanna Formation (Collier, 1907)

Part of the Boggy Formation (Hendricks and Parks, 1950)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas; Oklahoma (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Poteau Mountains [topographic feature], Le Flore County, Oklahoma, and Sebastian County, Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Original Reference:

Winslow, A.H., *in* Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 51

Chance, H.M., *in* Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 52

POWELL LIMESTONE / DOLOMITE

Age:

Ibexian Series, Ordovician (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Powell limestone (Purdue and Miser, 1916)

Powell Formation of the Yellville Group (Hedden, 1976)

Sub-Division(s):

Black Ledge Chert Member (Hedden, 1976)

Smithville Lithosome of the Powell Formation of the Yellville Group (Hedden, 1976)

Black Rock Lithosome of the Powell Formation of the Yellville Group (Hedden, 1976)

Black Rock Member (Hedden 1980)

Smithville Member (Hedden, 1980)

Previous Name(s):

Part of the upper †Yellville Formation (Adams and Ulrich, 1904)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Powell Dolomite	(formal)
	Powell Formation	(formal)
Arkansas Geological Survey:	Powell Dolomite	(formal)

Regional Distribution:

Northern Arkansas; Missouri (McFarland, 1998, revised 2004)

Type Locality:

Powell railroad station (now abandoned), about 2 miles down Crooked Creek from present town of Pyatt, in Sections 4 through 6, T. 18 N., R. 17 W., Marion County, Arkansas (Purdue and Miser, 1916; Keroher *et al*., 1966)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Powell (railroad station; now abandoned), near Pyatt, Marion County, Arkansas; name credited to E.O. Ulrich. (Purdue and Miser, 1916; McFarland, 1998, revised 2004)

Original Reference:

Purdue, A.H. and Miser, H.D., 1916, Description of the Eureka Springs and Harrison quadrangles: U.S. Geological Survey Geologic Atlas of the United States, Eureka Springs-Harrison folio, Arkansas-Missouri, n. 202, p. 2, 4, 5, 6, 7, 9, 16, 17, 18, 20, 21

PRAIRIE GROVE MEMBER

Age:

Morrowan Series, Pennsylvanian (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Prairie Grove member of the Hale formation of the Morrow group (Henbest, 1953)

Prairie Grove Member of the Hale Formation (Ballard, 1957)

Sub-Division(s):

None

Previous Name(s):

Part of the Washington Shale and Sandstone (Branner, 1891; Simonds, 1891)

Part of the upper Hale Formation (Adams and Ulrich, 1904)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Prairie Grove Member of the Hale Formation (formal)
Arkansas Geological Survey:	Prairie Grove Member of the Hale Formation (formal)

Regional Distribution:

Northwestern Arkansas; Oklahoma (Keroher and others, 1966)

Type Locality:

Near Prairie Grove, Washington County, Arkansas (Henbest, 1953)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Prairie Grove [town], Washington County, Arkansas (Henbest, 1953)

Original Reference:

Henbest, L.G., 1953, Morrow group and lower Atoka formation of Arkansas: American Association of Petroleum Geologists Bulletin, v. 37, n. 8, p. 1935, 1940-1942

†PRAIRIE HOLLOW MEMBER

Age:

Morrowan Series, Pennsylvanian

This is an age equivalent to part of the Jackfork Group (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Prairie Hollow Member of the Irons Fork Mountain Formation of the Jackfork Group (Morris, 1965)

Prairie Hollow Shale Member of the Wildhorse Mountain Formation of the Jackfork Group (Walthall, 1967)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed “sandstones and shales” (Griswold, 1892)

Part of the Jackfork Sandstone / Formation (Purdue, 1909a)

Replaced By:

Part of the Jackfork Sandstone / Formation. Prairie Hollow Member was discarded

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Southwestern Arkansas (Keroher, 1970)

Type Locality:

In Prairie Hollow, T. 1 and 2 S., R. 12 E., near type locality of Prairie Mountain formation, Sec. 25, T. 1 S., R. 12 E., Atoka County, Oklahoma (Harlton, 1938)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Prairie Hollow [topographic feature], T. 1 and 2 S., R. 12 E., Atoka County, Oklahoma (Harlton, 1938)

Original Reference:

Harlton, B.H., 1938, Stratigraphy of the Bendian of the Oklahoma salient of the Ouachita Mountains: American Association of Petroleum Geologists Bulletin, v. 22, n. 7, p. 857, 880-881

†PRAIRIE MOUNTAIN FORMATION

Age:

Morrowan Series, Pennsylvanian (Gordon and Stone, 1976)

Nomenclatorial Assignment(s):

Prairie Mountain formation of the Jackfork Group (Walthall, 1967)

Sub-Division(s):

†Prairie Hollow Member (Harlton, 1938)

Previous Name(s):

Part of the unnamed “sandstones and shales” (Griswold, 1892)

Part of the Jackfork Sandstone / Formation (Purdue, 1909a)

†Brushy Knob Formation of the Jackfork Group (Walthall, 1967)

†Prairie Mountain Formation of the Jackfork Group (Morris, 1971)

Replaced By:

†Brushy Knob Formation of the Jackfork Group (Morris, 1971)

Part of the Jackfork Sandstone / Formation. Prairie Mountain Formation was disused

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Southeastern Oklahoma (Keroher *et al*., 1966)

Type Locality:

Prairie Mountain, Sec. 25, T. 1 S., R. 12 E., Pushmataha County, Oklahoma (Harlton, 1938)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Prairie Mountain [topographic feature], Pushmataha County, Oklahoma (Harlton, 1938)

Original Reference:

Harlton, B.H., 1938, Stratigraphy of the Bendian of the Oklahoma salient of the Ouachita Mountains: American Association of Petroleum Geologists Bulletin, v. 22, n. 7, p. 880-884

†PRODUCTAL LIMESTONE

Age:

Chesterian Series, Mississippian

This is an age equivalent to part of the Fayetteville Shale (Owen, 1858; Easton, 1942)

Nomenclatorial Assignment(s):

productal limestone (Owen, 1860)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

Fayetteville Shale (Branner, 1891; Simonds, 1891; Easton, 1942)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Uncertain on the full distribution. This name is known to have been used in Northwestern Arkansas (Owen, 1860), Kentucky (Owen, 1857), Nebraska (Smithsonian Institution, 1855), United Kingdom (Phillips, 1836)

Type Locality:

In the U.S., on the Missouri River, ten miles south of old Fort Kearny, Nebraska City, Otoe County, Nebraska (Smithsonian Institute, 1855)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

The brachiopod fossil *Productus* found within the unit (Owen, 1860)

Original Reference:

Smithsonian Institution, 1855, Ninth annual report of the board of regents of the Smithsonian Institution showing the operations, expenditures, and condition of the institution up to January 1, 1855: Nicholson, Washington, p. 394

This name has been previously used in the United Kingdom in:

Phillips, J., 1836, Illustrations of the geology of Yorkshire; or a description of the strata and organic remains accompanied by a geological map, sections, and diagrams, and figures of the fossils, part 2, the mountain limestone district: Murray, London, p. 37, 253 p.

REEDS SPRING MEMBER

Age:

Osagean Series, Mississippian (Mazzullo *et al*., 2013)

Nomenclatorial Assignment(s):

Reeds Spring Formation (Cline, 1934)

Reeds Spring Member of the Boone Formation (Imes and Emmett, 1994)

Reeds Spring Formation of the Boone Group (Mazzullo *et al*., 2013)

Sub-Division(s):

Pineville tripolite facies (Mazzullo *et al*., 2013)

White River tripolite facies (Mazzullo *et al*., 2013)

Buffalo River tripolite facies (Mazzullo *et al*., 2013)

Previous Name(s):

Part of the Boone Limestone / Formation of the †Osage Group (Branner, 1891; Simonds, 1891)

Part of the Boone Limestone / Formation (Adams and Ulrich, 1904)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:

Reeds Spring Member of the Boone Formation (formal)

Arkansas Geological Survey: Not in Use

Reeds Spring Formation. Proposed in 2013 (Mazzullo *et al*., 2013). As of yet, this name has not been published in any U.S. Geological Survey or Arkansas Geological Survey publications for Arkansas.

Regional Distribution:

Northwestern Arkansas; Missouri and Oklahoma (Mazzullo *et al*., 2013)

Type Locality:

Along Missouri-Pacific railroad southeast of Reeds Spring, Stone County, Missouri (Moore, 1928)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Reeds Spring [town], Stone County, Missouri (Moore, 1928)

Original Reference:

Moore, R.C., 1928, Early Mississippian formations in Missouri: Missouri Bureau of Geology and Mines, 2nd series, v. 21, p. 143-145, 161-163, 169, 170, 190, 191, 193

†RICH FOUNTAIN FORMATION

Age:

Ibexian Series, Ordovician (Thompson, 2001)

Nomenclatorial Assignment(s):

Rich Mountain formation of the Jefferson City group (Cullison, 1944)

Sub-Division(s):

None

Previous Name(s):

Part of the Jefferson City Dolomite (Branner, 1927)

Replaced By:

Part of the Jefferson City Dolomite. Rich Fountain Formation was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas and southern Missouri (Keroher *et al*., 1966)

Type Locality:

Southwest of Rich Fountain, Sections 15, 16, 21, and 22, T. 42 N., R. 9 W., Osage County, Missouri (Cullison, 1944)

Type Section:

Southwest of Rich Fountain, Sections 15, 16, 21, and 22, T. 42 N., R. 9 W., Osage County, Missouri (Cullison, 1944)

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Rich Fountain [town], Ozark County, Missouri

Original Reference:

Cullison, J.S., 1944, The stratigraphy of some Lower Ordovician formations of the Ozark uplift: University of Missouri School of Mines and Metallurgy Bulletin, Technical Series, v. 15, n. 2, p. 15, 17-24, pl. 2, 15

RITCHEY FORMATION

Age:

Meramecian Series, Mississippian (Mazzullo *et al*., 2013)

Nomenclatorial Assignment(s):

Ritchey Formation of the Boone Group (Mazzullo *et al*., 2013)

Sub-Division(s):

None

Previous Name(s):

Upper part of the Boone Formation (Mazzullo *et al*., 2013)

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Ritchey Formation of the Boone Group. Proposed in 2013 (Mazzullo *et al*., 2013). As of yet, this name has not been published in any U.S. Geological Survey or Arkansas Geological Survey publications.

Regional Distribution:

Northwestern Arkansas; Missouri and Oklahoma (Mazzullo *et al*., 2013)

Type Area:

Northwestern Arkansas and southeastern Missouri (Mazzullo *et al*., 2013)

Type Section (Composite):

1. Lower section at roadcut on U.S. Highway 60 in NW NE Sec. 1, T. 25 N., R. 30 W.., and in SW SE Sec. 36, T. 26 N., R. 30 W., Newton County, Missouri (Mazzullo *et al*., 2013)
2. Upper section at roadcut on U.S. Highway 65 in Sections 28 and 29, T. 20 N., R. 21 W., Boone County, Arkansas (Mazzullo *et al*., 2013)

Primary Reference Section:

Kemp Stone Company's Fairland Quarry, W½ Sec. 11, T. 26 N., R. 23 E., Ottawa County, Oklahoma (Mazzullo *et al*., 2013)

Origin of Name:

Not stated. Presumably, Ritchey [town], Newton County, Missouri

Original Reference:

Mazzullo, S.J., Boardman, D.R., Wilhite, B.W., Godwin, C., Morris, B.T., 2013, Revisions of outcrop lithostratigraphic nomenclature in the lower to middle Mississippian subsystem (Kinderhookian to basal Meramecian Series) along the shelf-edge in southwest Missouri, northwest Arkansas, and northeast Oklahoma: Oklahoma City Geological Society Shale Shaker, v. 63, n. 6, p. 414-454

†ROCK LEVEE LIMESTONE

Age:

Mohawkian Series, Ordovician (Thompson, 2001)

Nomenclatorial Assignment(s):

Rock Levee limestone (Caplan, 1954; Twehhofel *et al*., 1954)

Sub-Division(s):

None

Previous Name(s):

Parts of the Joachim Formation and the Plattin Formation (Grohskopf, 1948)

Murfreesboro Limestone (Stones River formation)

Replaced By:

The Rock Levee Limestone was used in the subsurface of Arkansas (Caplan, 1954), however, a correlation chart of the North American Ordovician formations indicates this unit was found in unreferenced surface exposures in Arkansas (Twehofel *et al*., 1954)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northern Arkansas (now recognized in the subsurface only) (Caplan, 1954; Twehofel *et al*., 1954); Missouri (Grohskopf, 1848)

Type Locality:

0.2 miles east of the old U.S. Highway 61 and Missouri Highway 74 junction, Cape Girardeau County, Missouri (Grohskopf, 1948)

Type Section:

0.2 miles east of the old U.S. Highway 61 and Missouri Highway 74 junction, Cape Girardeau County, Missouri (Grohskopf, 1948). This section was previously measured by McQueen (1939)

Primary Reference Section:

Not designated

Origin of Name:

Rock Levee siding [railroad structure] on the St. Louis-San Francisco Railway, NW¼ NW¼ NW¼ Sec. 24, T. 30 N., R. 13 E., Cape Girardeau County, Missouri (Grohskopf, 1948)

Original Reference:

Grohskopf, J.G., 1948, Zones of Plattin-Joachim of eastern Missouri: American Association of Petroleum Geologists Bulletin, v. 32, n. 3, p. 351, 352, 355, 360-362, 364

†ROCKAWAY CONGLOMERATE BEDS

Age:

Ibexian Series, Ordovician

This is an age equivalent to part of the Cotter Dolomite / Formation (Keroher *et al*., 1966; Thompson, 2001)

Nomenclatorial Assignment(s):

Rockaway conglomerate / conglomerate beds of the Lutie member of Theodosia Formation of the Jefferson City group (Cullison, 1944)

Sub-Division(s):

None

Previous Name(s):

Part of the †Yellville Limestone (Adams and Ulrich, 1904)

Part of the Cotter Dolomite / Formation (Purdue and Miser, 1916)

Replaced By:

Part of the Cotter Dolomite / Formation. Rockaway Conglomerate Beds was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas; Missouri (Keroher *et al*., 1966)

Type Locality:

Rockaway Beach, Lake Taneycomo, Taney County, Missouri (Cullison, 1944)

Type Section:

Sec. 12, T. 23 N., R. 21 W., Rockaway Beach, Taney County, Missouri (Cullison, 1944)

Primary Reference Section:

Not designated

Origin of Name:

Rockaway Beach [town], Taney County, Missouri (Cullison, 1944)

Original Reference:

Cullison, J.S., 1944, The stratigraphy of some Lower Ordovician formations of the Ozark uplift: University of Missouri School of Mines and Metallurgy Bulletin, Technical Series, v. 15, n. 2, p. 25, 26, 27, 32, pls. 2, 6

†*RUDDELL SHALE

Age:

Chesterian Series, Mississippian (Haley *et al*., 1993)

Nomenclatorial Assignment(s):

Ruddell shale (Gordon, 1944)

Ruddell formation (Sadlick, 1956)

Ruddell Member of the Moorefield Formation (Drahovzal and Quinn, 1972)

Ruddell Member of the Moorefield Shale (Manger and Quinn, 1972)

Ruddell Shale Member of the Moorefield Formation (Malinky and Mapes, 1982)

Sub-Division(s):

None

Previous Name(s):

Part of the upper Moorefield Shale / Formation (Adams and Ulrich, 1904)

Replaced By:

Moorefield Shale / Formation. Ogren (1968) proposed to abandon the Ruddell Shale name and merge the beds into the Moorefield Shale / Formation. The Ruddell Shale is considered to be a part of the Moorefield be several geologists including the U.S. Geological Survey, however, it

was mapped on the 1993 geologic map of Arkansas (Haley *et al*., 1976, revised 1993; McFarland, 1998, revised 2004)

Formal Designation:

U.S. Geological Survey:	Abandoned	
Arkansas Geological Survey:	Ruddell Shale	(formal)

Regional Distribution:

Central-northern Arkansas (McFarland, 1998, revised 2004)

Type Locality:

West end of Ruddell Hill, near Ruddell's mill, along the Arkansas Highway 106 (Bethesda Road), NE¼ NE¼ Sec. 13, T. 13 N., R. 7 W. (Gordon (1944) mistakenly wrote "T. 7 N., R. 13 W."), in Ruddell civil township, Independence County, Arkansas, starting in a gully a few feet below the culvert 3/8 mile northwest of Ruddell's mill and continuing southeast to the crown of Ruddell Hill (Gordon and Kinney, 1944)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Probably named from Ruddell Hill [topographic feature], Independence County, Arkansas; or Ruddell's mill; or Ruddell civil township

Original Reference:

Gordon, M., Jr., 1944, Moorefield formation and Ruddell shale, Batesville district, Arkansas: American Association of Petroleum Geologists Bulletin, v. 28, n. 11, p. 1626, 1627, 1628, 1629, 1631-1634

†RUSSELLVILLE SHALES

Age:

Atoka Series, Pennsylvanian

This is an age equivalent to part of the Atoka Formation (Wilmarth, 1938; Keroher *et al*., 1966; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Russellville shales of the Appleton Stage of the Coal Measures (Winslow, 1896)

Sub-Division(s):

None

Previous Name(s):

Part of the †Millstone Grit (Owen, 1958)

Part of the †Lower or Eastern Coal Bearing Division (Winslow, 1888)

Replaced By:

Part of the †Winslow Formation (Adams and Ulrich, 1904)

Part of the middle Atoka Formation (Wilmarth, 1938)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas; Oklahoma (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Russellville [town], Pope County, Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Original Reference:

Winslow, A.H., *in* Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 51

†SACCHAROIDAL SANDSTONE

Age:

Whiterockian Series, Ordovician (Pickell, 2012)

Nomenclatorial Assignment(s):

saccharoidal sandstone (Penrose, 1892)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

Key Sandstone

St. Peter Sandstone

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

The full extent of this unit is uncertain. Northern Arkansas; Missouri (Penrose, 1892; Thompson, 2001)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

The descriptive term of this sandstone's granular texture (Thompson, 2001)

Original Reference:

Swallow, G.C., 1855, First and second annual reports of the geological survey of Missouri: James Lusk, Jefferson City, 239 p.

SAVANNA FORMATION

Age:

Desmoinesian Series, Pennsylvanian (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Savanna sandstone (Collier, 1907)

Savanna Formation (Branner, 1927)

Savanna formation of the Krebs group (Haley, 1961)

Savana Formation (Haley, 1977). This is a typo

Savanna Sandstone Formation (USDA Forest Service, 1979)

Sub-Division(s):

Charleston coal bed (Collier, 1907)

Paris coal bed (Hendricks *et al*., 1936)

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Winslow, 1888; Collier, 1907)

Part of the †Sebastian Stage of the †Coal Measures (Possibly part of the †Belva Shale, †Hartwell Sandstone, and †Tomlinson Shale) (Winslow *in* Stevenson, 1896)

Lower part of the †Paris Shale and the upper part of the †Fort Smith Formation (Hendricks *et al*., 1936)

Replaced By:

Savanna Formation of Collier (1907) replaced by Boggy Formation. The Savanna Formation name was moved to another part of the section underlying the Boggy Formation. (Hendricks and Parks, 1950)

Formal Designation:

U.S. Geological Survey:	Savanna Formation	(formal)
Arkansas Geological Survey:	Savanna Formation	(formal)

Regional Distribution:

Western Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Area:

In the area of McAlester and Savanna, Pittsburg County, Oklahoma (Taff, 1899)

Type Section:

Not designated

Primary Reference Section:

Section-line road and route of power line between Sec. 1, T. 5 N., R. 16 E., and Sec. 6, T. 5 N., R. 17 E.; and between Sec. 36, T. 6 N., R. 16 E., and Sec. 31, T. 6 N., R. 17 E., Pittsburg County, Oklahoma (Hemlish, 1995; Hemlish and Suneson, 1997)

Origin of Name:

Not stated. Presumably, Savanna [town], Pittsburg County, Oklahoma (Morgan, 1927)

Original Reference:

Taff, J.A., 1899, Geology of the McAlester-Lehigh coal field, Indian Territory, *in* Nineteenth annual report of the United States Geological Survey, part 3, Economic geology: U.S. Geological Survey Annual Report, p. 437-438

†SEBASTIAN STAGE

Age:

Desmoinesian Series, Pennsylvanian

This is an age equivalent to part of the McAlester, Savanna, and Boggy Formations (Collier, 1907; Wilmarth, 1938; Hendricks and Read, 1950; Keroher, 1966)

Nomenclatorial Assignment(s):

Sebastian Stage of the Coal Measures (Winslow *in* Stevenson, 1896)

Sub-Division(s):

†Belva Shale (Winslow *in* Stevenson, 1896)

†Greenwood Sandstone (Winslow *in* Stevenson, 1896)

†Hartwell Sandstone (Winslow *in* Stevenson, 1896)

†Ozark Sandstone (Winslow *in* Stevenson, 1896)

†Tomlinson Shale (Winslow *in* Stevenson, 1896)

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Winslow, 1888; Collier, 1907)

Replaced By:

†Fort Smith Formation, †Paris Shale, and the lower Savanna Formation (Collier, 1907)

Upper McAlester Formation, Savanna Formation, and the lower Boggy Formation (Hendricks and Parks, 1950)

Upper part of the Krebs Group (including the Upper McAlester Formation, Savanna Formation, and the lower Boggy Formation) (Haley, 1961; Merewether and Haley, 1961)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas; Oklahoma (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, from Sebastian County, Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Original Reference:

Winslow, A.H., *in* Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 51

SHORT CREEK OOLITE

Age:

Meramecian Series, Mississippian (Manger and Shelby, 2000)

Osagean Series, Mississippian (Mazzullo *et al*., 2013)

Nomenclatorial Assignment(s):

Short Creek Oolite Member of the Boone limestone (Ulrich, 1911)

Short Creek oolite of the Boone limestone (Giles, 1935)

Short Creek Oolite of the Boone Formation (Shelby, 1986)

Short Creek Oolite Member of the Boone Formation/(Limestone/Chert) (McFarland, 1998, revised 2004)

Short Creek Member of the Bentonville Formation of the Boone Group (Mazzullo *et al*., 2013)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Limestone / Formation of the †Osage Group (Branner, 1891; Simonds, 1891)

Part of the Boone Limestone / Formation (Adams and Ulrich, 1904)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Not in Use	
Arkansas Geological Survey:	Short Creek Oolite	(informal)

Regional Distribution:

Northwestern Arkansas; Kansas, Oklahoma, and Missouri (Keroher *et al*., 1966; Mazzullo *et al*., 2013)

Type Locality:

Near Empire, Kansas, on the north bluff of Short Creek, half a mile southwest of the site of the Empire depot and a hundred yards north of the crossing of the Missouri, Kansas, and Texas and the Frisco railways (Smith and Siebenthal, 1907)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Short Creek [creek], Jasper County, Missouri (Smith and Siebenthal, 1907)

Original Reference:

Smith, W.S.T. and Siebenthal, C.E., 1907, Description of the Joplin district: U.S. Geological Survey Geologic Atlas of the United States, Joplin District Folio, Missouri-Kansas, n. 148, p. 2, 5

†SLATINGTON SHALE

Age:

Niagaran to Cayugan Series, Silurian

This is an age equivalent to the Missouri Mountain Shale / Formation (Wilmarth, 1938; Keroher *et al*., 1966; Jusczuk, 2002)

Nomenclatorial Assignment(s):

Slatington shale (Purdue, 1909b)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "shales, limestones, massive quartzose sandstones, cherty blue limestones, with gray, black, and yellow shales at the bottom" (Griswold, 1892)

Replaced By:

Missouri Mountain Shale / Formation (Purdue, 1909a)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Southwestern Arkansas; Oklahoma (Keroher *et al*., 1966)

Type Area:

Ouachita Mountains in west-central Arkansas (Purdue, 1909b)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Slatington [town], Montgomery County, Arkansas (Wilmarth, 1938)

Original Reference:

Purdue, A.H., 1909b, Structure and stratigraphy of the Ouachita Ordovician area, Arkansas, (abstract): Geological Society of America Bulletin, v. 19, p. 557

†*SMITHVILLE FORMATION

Age:

Ibexian Series, Ordovician (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Smithville limestone (Miser and Stone, 1929)

Smithville formation (McKnight, 1935)

Smithville Lithosome of the Powell Formation of the Yellville Group (Hedden, 1976)

Smithville Member of the Powell Dolomite (McLeod, 1979)

Smithville Member of the Powell formation (Hedden, 1980)

Sub-Division(s):

Black Rock Limestone Member (Wise *et al*., 1975)

Previous Name(s):

Part of the "magnesian limestones, sandstones, cherts, etc." (Hopkins, 1893)

Part of the †Yellville Limestone (Adams and Ulrich, 1904)

Replaced By:

In Arkansas Geological Survey usage, the Smithville has fallen out of usage and has been replaced by the Powell Limestone / Dolomite. In U.S. Geological Survey usage, the Smithville Formation is still in use (Kresse *et al*., 2014)

Formal Designation:

U.S. Geological Survey:	Smithville Formation	(formal)
Arkansas Geological Survey:	Abandoned	

Regional Distribution:

Northwestern Arkansas; Missouri (Keroher *et al*., 1966; Kresse *et al*., 2014)

Type Locality:

Not designated. Presumably, near Smithville, Lawrence County, Arkansas

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Smithville [town], Lawrence County, Arkansas. Named by E.O. Ulrich in unpublished notes (McKnight, 1935)

Original Reference:

Miser, H.D. and Stone, G.W. (eds.), 1929, Geologic map of Arkansas: Arkansas Geological Survey, map, scale 1:500,000

†*SNEEDS LIMESTONE LENTIL / DOLOMITE MEMBER

Age:

Whiterockian Series, Ordovician

This is an age equivalent to part of the Everton Formation (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Sneeds limestone lentil of the Everton Limestone (Purdue and Miser, 1916)

Sneeds limestone member of the Everton Formation (Giles, 1930)

Sneeds Dolomite Member of the Everton Formation (Suhm, 1974)

Sneeds Dolostone Member of the Everton Formation (Hedden, 1976)

Sub-Division(s):

None

Previous Name(s):

Part of the Everton Formation (Purdue, 1907a)

Replaced By:

In Arkansas Geological Survey usage, the Sneeds has fallen out of usage and has been replaced as an unnamed part of the Everton Formation. In U.S. Geological Survey usage, the Sneeds Dolomite Member is still in use (Knierim *et al*., 2011)

Formal Designation:

U.S. Geological Survey:

Sneeds Limestone Lentil of the Everton Formation (uncertain)*

Sneeds Dolomite Member of the Everton Formation (formal)

*The U.S. Geological Survey's National Geologic Map Database indicates the "Sneeds Limestone Lentil of the Everton Formation" is valid usage. However, the only citation available is Keroher *et al*. (1966) and Wilmarth (1938). The USGS NGMDB also indicates that the "Sneeds Dolomite Member of the Everton Formation" is not valid usage although it has been used by Knierim *et al*. (2011) in the USGS Scientific Investigations Report 2011-5031

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northern Arkansas (Keroher *et al*., 1966)

Type Locality:

In Hemmed-in Hollow, near Sneeds Creek, south of Compton, Newton County, Arkansas (Purdue and Miser, 1916)

Type Section:

In Hemmed-in Hollow, near Sneeds Creek, south of Compton, Newton County, Arkansas (Purdue and Miser, 1916)

Primary Reference Section:

Not designated

Origin of Name:

Sneeds Creek [creek], Newton County, Arkansas (Purdue and Miser, 1916)

Original Reference:

Purdue, A.H. and Miser, H.D., 1916, Description of the Eureka Springs and Harrison quadrangles: U.S. Geological Survey Geologic Atlas of the United States, Eureka Springs-Harrison folio, Arkansas-Missouri, n. 202, p. 5, 6

†SPADRA SHALE

Age:

Desmoinesian Series, Pennsylvanian

This is an age equivalent to part of the McAlester Formation (Hendricks and Parks, 1950; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Spadra formation (Keyes, 1901)

Spadra shale of the McAlester group (Collier, 1907)

Sub-Division(s):

Upper Hartshorne coal bed (Miser and Stone, 1929)

Hartshorne coal (Miser and Stone, 1929)

Previous Name(s):

Part of the †Intermediate Barren Division (Winslow, 1888; Keyes, 1901) or the lower part of the †Upper or Western Coal Bearing Division (Winslow, 1888; Collier, 1907)

Part of or all of the †Spadra Stage of the †Coal Measures (Winslow *in* Stevenson, 1896; Keyes, 1901)

Replaced By:

Lower part of the McAlester Formation (Hendricks and Parks, 1950)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas (Keroher *et al*., 1966)

Type Locality:

Near Spadra, Johnson County, Arkansas (Collier, 1907)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Spadra [town], Johnson County, Arkansas (Collier, 1907)

Original Reference:

Keyes, C.R., 1901, A depositional measure of unconformity: Geological Society of America Bulletin, v. 12, n. 1, p. 182

†SPADRA STAGE

Age:

Desmoinesian Series, Pennsylvanian

This is an age equivalent to part of the McAlester Formation (Keyes, 1901; Collier, 1907; Wilmarth, 1938; Hendricks and Parks, 1950; Keroher *et al*., 1966; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Spadra Stage of the Coal Measures (Winslow *in* Stevenson, 1896)

Sub-Division(s):

None

Previous Name(s):

Part of the †Intermediate Barren Division (Keyes, 1901) or the lower part of the †Upper or Western Coal Bearing Division (Collier, 1907)

Replaced By:

Part or all of the †Spadra Shale (Keyes, 1901; Collier, 1907)

Part of the lower McAlester Formation (Hendricks and Parks, 1950)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas (Keroher *et al*., 1966)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Spadra [town], Johnson County, Arkansas (Collier, 1907)

Original Reference:

Winslow, A.H., *in* Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 51

†SPIRIFER LIMESTONE

Age:

Unknown Series, Mississippian (Owen, 1860)

Nomenclatorial Assignment(s):

Spirifer limestone (Owen, 1860)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

Possibly part of the Boone Limestone / Formation

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Uncertain on the full distribution. This name is known to have been used in Northwestern Arkansas (Owen, 1860), Kentucky (Owen, 1857), Iowa (Smithsonian Institution, 1855), Norway (Nordenskiöld, 1871), and Russia (Murchison *et al*., 1845)

Type Locality:

Keokuk Rapids, on the Mississippi River, at Keokuk, Lee County, Iowa (Smithsonian Institution, 1855)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

The brachiopod fossil *Spirifer* found within the unit (Owen, 1860)

Original Reference:

Smithsonian Institution, 1855, Ninth annual report of the board of regents of the Smithsonian Institution showing the operations, expenditures, and condition of the institution up to January 1, 1855: Nicholson, Washington, p. 396

This name has been previously used in western Russia in:

Murchison, R.I., de Verneuil, E., and von Keyserling, A., 1845, The geology of Russia in Europe and the Ural Mountains, v. 1: Murray, London, and Bertrand, Paris, p. 82

†SPRING CREEK LIMESTONE

Age:

Meramecian to Chesterian (?) Series, Mississippian

This is an age equivalent to part of the Moorefield Shale / Formation (Adams and Ulrich, 1904; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Spring Creek limestone (Williams, 1895)

Spring Creek Black shales and limestones (Williams, 1900)

Spring Creek limestone of the Moorefield shale (Adams and Ulrich, 1904)

Sub-Division(s):

None

Previous Name(s):

Part of the Fayetteville Shale. The Fayetteville Shale has been misattributed in early reports by Simonds (1891), Penrose (1891), and Hopkins (1893) to the beds now known as the Moorefield Shale (Adams and Ulrich, 1904). Williams (1900) notes the Spring Creek is equivalent to part of the Fayetteville Shale as described by Penrose (1891).

Replaced By:

Part of the lower Moorefield Shale (Adams and Ulrich, 1904)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northern Arkansas (Keroher *et al*., 1966)

Type Locality:

Spring Creek, west of Batesville, Independence County, Arkansas (Williams, 1895)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Spring Creek [creek], Independence County, Arkansas (Williams, 1895)

Original Reference:

Williams, H.S., 1895, On the recurrence of Devonian fossils in strata of Carboniferous age: American Journal of Science, 3rd series, v. 49, p. 94-101

ST. CLAIR LIMESTONE

Age:

Niagaran to Cayugan Series, Silurian (Cramer *et al*., 2010; Turner and Hudson, 2010)

Nomenclatorial Assignment(s):

St. Clair limestone (Penrose, 1891)

St. Clair marble / St. Claire marble (Branner, 1892)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

Part of the upper St. Clair Limestone was replaced by the †Cason Limestone (Williams, 1894), which was later discarded and reverted back to the St. Clair Limestone

Formal Designation:

U.S. Geological Survey:	St. Clair Limestone	(formal)
Arkansas Geological Survey:	St. Clair Limestone	(formal)

Regional Distribution:

Northern Arkansas; Illinois and Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

St. Clair Springs, Independence County (Penrose, 1891)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

St. Clair Spring [spring], Independence County, Arkansas (Penrose, 1891)

Original Reference:

Penrose, R.A.F., Jr., 1891, Manganese: its uses, ores, and deposits: Annual report of the Geological Survey of Arkansas for 1890, v. 1, p. 101-102, 112-114, 124-128, 166-203, 214-215

ST. JOE LIMESTONE MEMBER

Age:

Kinderhookian to Osagean Series, Mississippian (Chandler, 2013; Mazzullo *et al*., 2013)

Nomenclatorial Assignment(s):

St. Joe marble of the Boone chert of the †Osage Group (Hopkins, 1983)

St. Joe limestone member of the Boone Limestone (Adams and Ulrich, 1904)

St. Joe member of the Boone chert (Ulrich, 1911)

St. Joe marble member of the Boone formation (Miser and Stone, 1929)

St. Joe formation (Cline, 1934)

St. Joe Group (Mazzullo *et al*., 2013)

Sub-Division(s):

St. Joe Limestone:

Compton Member (Manger and Shanks, 1976)

Northview Member (Manger and Shanks, 1976)

Pierson Member (Manger and Shanks, 1976)

†Walls Ferry Limestone Bed of the St. Joe Limestone Member of the Boone Formation (Gordon, 1977)

St. Joe Group:

Compton Formation (Mazzullo *et al*., 2013)

Northview Formation (Mazzullo *et al*., 2013)

Pierson Formation (Mazzullo *et al*., 2013)

Previous Name(s):

Part of the Boone Chert of the †Osage Group (Branner, 1891; Simonds, 1891)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:

St. Joe Limestone Member of the Boone Formation (formal)

Arkansas Geological Survey:

St. Joe Limestone Member of the Boone Formation (formal)

St. Joe Group. Proposed in 2013 (Mazzullo *et al*., 2013). As of yet, this name has not been published in any U.S. Geological Survey or Arkansas Geological Survey publications for Arkansas

Regional Distribution:

Northern Arkansas; Missouri and Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Not stated. Presumably, St. Joe, Searcy County, Arkansas

Type Section:

Not designated

Primary Reference Section (St. Joe Member):

In quarry 2 miles northwest of St. Joe, in NE¼ NW¼ Sec. 18, T. 16 N., R. 17 W., Searcy County, Arkansas (McFarland, 1998, revised 2004)

Primary Reference Section (St. Joe Group):

Roadcut on Highway 14, 5.1 miles east of Omaha, in N½ SW¼ Sec. 16, T. 21 N., R. 20 W., Boone County, Arkansas (Mazzullo *et al*., 2013)

Origin of Name:

St. Joe [town], Searcy County, Arkansas (Hopkins, 1893)

Original Reference:

Hopkins, T.C., 1893, Marbles and other limestones: Annual report of the Geological Survey of Arkansas for 1890, v. 4, p. 10, 91, 150, 209-211, 244, 249, 253-349, 383, pl. 3

ST. PETER SANDSTONE

Age:

Whiterockian Series, Ordovician (Pickell, 2012)

Nomenclatorial Assignment(s):

St. Peter sandstone (Taff, 1906)

Saint Peter sandstone (Purdue, 1907)

St. Peter's sandstone (Branner, 1927). This is a typo

Sub-Division(s):

None

Previous Name(s):

†Saccharoidal sandstone (Penrose, 1892)

†Key Sandstone (Adams and Ulrich, 1904)

Replaced By:

The name St. Peter Sandstone is still in use, however, there has been much confusion over which bed this name applied. In early reports of the Arkansas Geological Survey, the "saccharoidal sandstone" descriptive term was applied to the Newton Sandstone Member of the Everton Formation. The name, Key Sandstone, later replaced the "saccharoidal sandstone", but was mistakenly correlated to three sandstone beds – the Newton Sandstone, the St. Peter Sandstone,

and the Sylamore Sandstone – unaware that there was more than one sandstone bed in the study area (McKnight, 1935). Ulrich (*in* Adams and Ulrich, 1905) resolved the problem by designating the St. Peter Sandstone to the beds as currently recognized.

Formal Designation:

U.S. Geological Survey:	St. Peter Sandstone	(formal)
Arkansas Geological Survey:	St. Peter Sandstone	(formal)

Regional Distribution:

Northern Arkansas; Illinois, Indiana, Iowa, and Kansas (McFarland, 1998, revised 2004)

Type Locality:

Bluff where Minnesota River (formerly called St. Peter's River) joins Mississippi River, at Fort Snelling, Hennepin County, Minnesota (Stauffer, 1934; Keroher *et al*., 1966)

Type Section:

Not designated

Reference Sections:

Not designated

Origin of Name:

St. Peters River (now called Minnesota River) [river], near St. Paul, Minnesota (Owen, 1847)

Original Reference:

Owen, D.D., 1847, Preliminary report containing outlines of the progress of the geological survey of Wisconsin and Iowa, up to October 11, 1847, *in* Report from the acting Secretary of the Treasury, communicating the annual report of the Commissioner of the General Land Office, December 13, 1847: United States 30th Congress, 1st Session, Senate Executive Document, serial set v. 504, n. 2, p. 169, 170

STANLEY SHALE / FORMATION

Age:

Meramecian to Chesterian Series, Mississippian (Wright, 2002)

Nomenclatorial Assignment(s):

Stanley shale (Purdue, 1909a)

Stanley shale formation (McElwaine, 1946)

Stanley formation (McElwaine, 1946)

Stanley group (Seely, 1963)

Sub-Division(s):

Stanley Formation:

†Chickasaw Creek Member (Cohee and Wright, 1976)

†Gap Ridge Sandstone Member (Stearn, 1935)

†Hatton Tuff Lentil / Member (Miser, 1920)

†Hot Springs Sandstone Member (Purdue, 1910)

†Moyers Member (Cohee and Wright, 1976)

†Parker Hill Sandstone (Stearn, 1935)

†Polk County Ash Bed (Williams, 1891a)

†Tenmile Creek Member (Cohee and Wright, 1976)

Stanley Group:

†Chickasaw Creek Formation (Harlton, 1938)

†Gap Ridge Sandstone Member of the †Moyers Formation (Walthall, 1967)

†Moyers Formation (Harlton, 1938)

†Parker Hill Sandstone Member of the †Moyers Formation (Walthall, 1967)

†Ten Mile (Tenmile) Creek Formation (Harlton, 1938)

Previous Name(s):

Part of the unnamed "sandstones and shales" (Griswold, 1892)

Part from †Fork Mountain Slate (Miser, 1918)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Stanley Shale	(formal)
Arkansas Geological Survey:	Stanley Formation	(formal)
	Stanley Shale	(formal)

Regional Distribution:

West-central Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Stanley, Pushmataha County, Oklahoma (Taff, 1902)

Type Section:

Stanley Formation:

Not designated

Stanley Group:

Not designated

Primary Reference Section:

Stanley Formation:

Not designated

Stanley Group:

North flank of the Lynn Mountain Syncline, from NW¼ Sec. 34, T. 2 N., R. 20 E. to SW¼ Sec. 13, T. 2 N., R. 20 E., Pushmataha County, Oklahoma (Pitt *et al*., 1982)

Origin of Name:

Stanley [town; originally "Standley"], Pushmataha County, Oklahoma (Taff, 1902; Suneson, 2016)

Original Reference:

Taff, J.A., 1902, Description of the Atoka quadrangle: U.S. Geological Survey Geological Atlas of the United States, Atoka Folio, Indian Territory, n. 79, p. 4

†STRINGTOWN SHALE

Age:

Whiterockian to Mohawkian Series, Ordovician

This is an age equivalent to the Missouri Mountain Shale / Formation (Jusczuk, 2002)

Nomenclatorial Assignment(s):

†Stringtown shale (Purdue, 1909a)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "shales, limestones, massive quartzose sandstones, cherty blue limestones, with gray, black, and yellow shales at the bottom" (Griswold, 1892)

Replaced By:

Upper part of Womble Shale (Miser, 1918)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Southwestern Arkansas (Purdue, 1909a); Oklahoma (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

One mile southeast of Atoka, Atoka County, Oklahoma (Taff, 1902)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated in original reference. Stringtown, Atoka County, Oklahoma (Purdue, 1909a)

Original Reference:

Taff, J.A., 1902, Description of the Atoka quadrangle: U.S. Geological Survey Geological Atlas of the United States, Atoka Folio, Indian Territory, n. 79, p. 4

***SYLAMORE SANDSTONE MEMBER**

Age:

Senecan Series, Devonian

This is an age equivalent to part of the Chattanooga Shale (Jusczuk, 2002)

Nomenclatorial Assignment(s):

Sylamore sandstone (Branner (1891) and Hopkins (1891) *in* Penrose, 1891)

Sylamore formation (Adams and Ulrich, 1904)

Sylamore sandstone member of the Chattanooga formation (Adams and Ulrich, 1905)

Sylamore sandstone member of the Chattanooga shale (Branner, 1927)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

None

Formal Designation:

U.S. Geological Survey:

Sylamore Sandstone Member of the Chattanooga Shale (uncertain)*

*The U.S. Geological Survey's National Geologic Map Database indicates the "Sylamore Sandstone Member of the Chattanooga Shale" is valid usage. However, the latest citation acknowledged by the USGS is an AGS publication by McEntire (1988)

Arkansas Geological Survey:

Sylamore Sandstone Member of the Chattanooga Shale / Formation (formal)

Regional Distribution:

Northern Arkansas; Illinois, Missouri, and Oklahoma (Keroher *et al*., 1966)

Type Locality:

In the Batesville area, presumably Sylamore Creek, Stone County, Arkansas (Penrose, 1891)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Sylamore Creek [creek], Stone County, Arkansas (Penrose, 1891). Name credited to Branner (1891) and Hopkins (1891)

Original Reference:

Penrose, R.A.F., Jr., 1891, Manganese: its uses, ores, and deposits: Annual report of the Geological Survey of Arkansas for 1890, v. 1, p. 113-115.

†*TENMILE (TEN MILE) CREEK MEMBER / FORMATION

Age:

Meramecian to Chesterian Series, Mississippian (Cohee and Wright, 1976)

Nomenclatorial Assignment(s):

Tenmile Creek formation of the Stanley group (Seely, 1963)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed “sandstones and shales” (Griswold, 1892)

Replaced By:

Part of the Stanley Shale / Formation

Formal Designation:

U.S. Geological Survey:

Tenmile Creek Member of the Stanley Shale (uncertain)*

*The U.S. Geological Survey’s National Geologic Map Database indicates the “Tenmile Creek Member” is valid usage in Arkansas. However, the latest citation is a non-USGS publication by Niem (1977)

Arkansas Geological Survey: Abandoned (uncertain)*

*Used the "Ten Mile Creek Formation" by Howard (1979) in Information Circular 24

Regional Distribution:

Southwestern Arkansas; Oklahoma (Seely, 1963)

Type Locality:

East of Miller, Sections 11 and 14, and 16, 20, and 21, T. 3 S., R. 15 E., Pushmataha County, Oklahoma (Harlton, 1938)

Type Section:

3 miles east of Miller, Sections 11 and 14, and 16, 20, and 21, T. 3 S., R. 15 E., Pushmataha County, Oklahoma (Harlton, 1938)

Primary Reference Section:

North of Miller, from SW¼ SW¼ SW¼ Sec. 15, T. 2 S., R. 15 E. to NW¼ Sec. 21, T. 2 S., R. 15 E., Pushmataha County, Oklahoma. Lower part not exposed. (Pitt *et al*., 1982)

Origin of Name:

Not stated. Presumably, Ten Mile Creek [creek], Pushmataha County, Oklahoma (Harlton, 1938)

Original Reference:

Harlton, B.H., 1938, Stratigraphy of the Bendian of the Oklahoma salient of the Ouachita Mountains: American Association of Petroleum Geologists Bulletin, v. 22, n. 7, p. 854 (fig. 1), 856, 864-870

†TENNESSEE SANDSTONE MEMBER

Age:

Desmoinesian Series, Pennsylvanian

This is an age equivalent to part of the McAlester and Savanna Formations (Collier, 1907; Hendricks and Parks, 1950; Keroher *et al*., 1966)

Nomenclatorial Assignment(s):

Tennessee sandstone member of the Fort Smith formation (Collier, 1907)

Sub-Division(s):

None

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Winslow, 1888; Collier, 1907)

Part of the lower †Sebastian Stage (and possibly part of the †Spadra Stage) of the †Coal Measures (Winslow *in* Stevenson, 1896)

Replaced By:

Uncertain. Part of the upper McAlester Formation and/or lower Savanna Formation (Hendricks and Parks, 1950)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas (Keroher *et al*., 1966)

Type Locality:

Tennessee Ridge, Sebastian County, Arkansas (Collier, 1907)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Tennessee Ridge [topographic feature], Sebastian County, Arkansas (Collier, 1907; Keroher *et al*., 1966)

Original Reference:

Collier, A.J., 1907, The Arkansas coal field: U.S. Geological Survey Bulletin, n. 326, p. 19

†THEODOSIA FORMATION

Age:

Ibexian Series, Ordovician (Thompson, 2001)

Nomenclatorial Assignment(s):

Theodosia formation of the Jefferson City group (Cullison, 1944)

Sub-Division(s):

†Blackjack Knob Member (Cullison, 1944)

†Hercules Tower Sandstone of the Lutie Member (Cullison, 1944)

†Lutie Member (Cullison, 1944)

†Gainesville Sandstone of the Lutie Member (Cullison, 1944)

†Gainesville Sandstone of the Blackjack Knob Member (Cullison, 1944)

†Pocket Hollow Oolite of the Lutie Member (Cullison, 1944)

†Rockaway Conglomerate of the Lutie Member (Cullison, 1944)

Previous Name(s):

Part of the †Yellville Limestone (Adams and Ulrich, 1904)

Part of the Cotter Dolomite / Formation (Thompson, 2001)

Replaced By:

Part of the Cotter Dolomite / Formation. Theodosia Formation was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northern Arkansas; Missouri (Keroher *et al*., 1966)

Type Locality:

Between towns of Theodosia and Lutie, Ozark County, Missouri (Cullison, 1944)

Type Section (Composite):

1. Type section of the Lutie Member – Between post offices of Theodosia and Lutie in Sec. 19, T. 22 N. R. 16 W., Ozark County, Missouri (Cullison, 1944)
2. Type section of the Blackjack Knob Member – On the north side of Blackjack Knob, Sections 9 and 16, T. 22 N., R. 17 W., Taney County, Missouri (Cullison, 1944)

Primary Reference Section:

Not designated

Origin of name:

Not stated. Presumably, Theodosia [town], Ozark County, Missouri

Original Reference:

Cullison, J.S., 1944, The stratigraphy of some Lower Ordovician formations of the Ozark uplift: University of Missouri School of Mines and Metallurgy Bulletin, Technical Series, v. 15, n. 2, p. 7, 11, 15, 16, 17, 21, 23, 25-32, 37, pl. 2

†TOMLINSON SHALE

Age:

Desmoinesian Series, Pennsylvanian

This is an age equivalent to parts of the McAlester and Savanna Formation (Collier, 1907; Hendricks and Read, 1950)

Nomenclatorial Assignment(s):

Tomlinson shale of the Sebastian Stage of the Coal Measures (Winslow *in* Stevenson, 1896)

Sub-Division(s):

None

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Winslow, 1888; Collier, 1907)

Replaced By:

Part of the †Fort Smith Formation, †Paris Shale, and/or Savanna Formation (Collier, 1907)

Part of the McAlester Formation and/or Savanna Formation (Hendricks and Read, 1950)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas; Oklahoma (Keroher *et al*., 1966)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Attributed to Tomlinson [town], Scott County, Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Original Reference:

Winslow, A.H., *in* Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 51

TRACE CREEK MEMBER / SHALE MEMBER

Age:

Morrowan Series, Pennsylvanian (Henbest, 1962)

Nomenclatorial Assignment(s):

Trace Creek Shale Member of the Bloyd Formation (Henbest, 1962b)

Trace Creek Member of the Bloyd Formation (Lane, 1967)

Sub-Division(s):

None

Previous Name(s):

Part of the upper †Morrow Formation (Adams and Ulrich, 1904)

Part of the upper Bloyd Formation / Shale of the †Morrow Group (Purdue, 1907)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:

Trace Creek Member of the Bloyd Formation	(formal)
Trace Creek Member of the Bloyd Shale	(formal)

Arkansas Geological Survey:

Trace Creek Shale Member of the Bloyd Formation (formal)

Regional Distribution:

Northwestern Arkansas; Oklahoma (Henbest, 1962)

Type Locality:

Southwest side of Bloyd Mountain from the center of E½ Sec. 3, T. 14 N., R. 30 W., to the center of the north side of Sec. 4, T. 14 N., R. 30 W., Washington County, Arkansas (Henbest, 1962)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Trace Creek [creek], Washington County, Arkansas (Henbest, 1962)

Original Reference:

Henbest, L.G., 1962, New members of the Bloyd Formation of Pennsylvanian age, Washington County, Arkansas, *in* Short papers in geology, hydrology, and topography, articles 120-179: U.S. Geological Survey Professional Paper, n. 450-D, p. D42-D44

UPPER HARTSHORNE COAL / COAL BED

Age:

Desmoinesian Series, Pennsylvanian (Haley and Hendricks, 1968)

Nomenclatorial Assignment(s):

Upper Hartshorne coal of the Spadra shale (Collier, 1907)

Upper Hartshorne coal / coal bed of the McAlester formation (Haley, 1960)

Upper Hartshorne coal bed of the McAlester Formation of the Krebs Group (Haley and Hendricks, 1968)

Sub-Division(s):

None

Previous Name(s):

Part of the †Upper or Western Coal Bearing Division (Winslow, 1888)

Part of the †Sebastian Stage of the †Coal Measures (Winslow *in* Stevenson, 1896)

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey:

upper Hartshorne coal of the McAlester Formation (informal)

upper Hartshorne coal bed of the McAlester Formation (informal)

Regional Distribution:

West-central Arkansas; Oklahoma (Haley and Hendricks, 1968)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Hartshorne [town], Pittsburg County, Oklahoma (Ray *in* Breckenridge, 1907)

Original Reference:

Taff, J.A. and Adams, G.I., 1900, Geology of the eastern Choctaw coal field, Indian Territory, *in* Twenty-first annual report of the United States Geological Survey, part 2, General geology, economic geology, Alaska: U.S. Geological Survey Annual Report, p. 274.

†UPPER OR WESTERN COAL BEARING DIVISION

Age:

Desmoinesian Series, Pennsylvanian

Age equivalent of the Boggy, McAlester, and Savanna Formations (Collier, 1907; Hendricks and Parks, 1950; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Upper or Western Coal Bearing Division / western and upper coal bearing division (Winslow, 1888)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

†Poteau Stage (including the †Poteau Shale), †Sebastian Stage (including the †Belva Shale, †Greenwood Sandstone, †Hartwell Sandstone, †Ozark Sandstone, and †Tomlinson Shale), and the †Spadra Stage of the †Coal Measures (Winslow *in* Stevenson, 1896)

†Fort Smith Formation, †Paris Shale, Savanna Formation, and †Spadra Shale (Collier, 1907)

Boggy Formation, McAlester Formation, and Savanna Formation (Hendricks and Parks, 1950)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

West-central Arkansas (Winslow, 1888)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Descriptive name for a section of coal bearing strata. Winslow (1888) was the first to use this name, however, various forms of this name have been previously used.

Original Reference:

Winslow, A., 1888, The geology of the coal regions; a preliminary report upon a portion of the coal regions of Arkansas: Annual Report of the Geological Survey of Arkansas for 1888, v. 3, p. 10-22, map

†WALLACE CREEK SHALE MEMBER

Age:

Chesterian Series, Mississippian

This is an age equivalent to part of the Pitkin Limestone / Formation (Ogren, 1968; McFarland, 1998; revised 2004)

Nomenclatorial Assignment(s):

Wallace Creek Shale Member of the Marcella Formation (Ogren, 1968)

Sub-Division(s):

None

Previous Name(s):

Part of the upper Pitkin Limestone / Formation (Ogren, 1968)

Replaced By:

Part of the upper Pitkin Limestone / Formation. Wallace Creek Shale Member was discarded

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northeastern Arkansas (Ogren, 1968)

Type Locality:

In an intermittent tributary of Wallace Creek, NW¼ Sec. 12, T. 13 N., R. 9 W., near Marcella, Stone County, Arkansas (Ogren, 1968)

Type Section:

In an intermittent tributary of Wallace Creek, NW¼ Sec. 12, T. 13 N., R. 9 W., near Marcella, Stone County, Arkansas (Ogren, 1968). Section previously described in Barnes (1960)

Primary Reference Section:

Not designated

Origin of Name:

Wallace Creek [creek], Stone County, Arkansas (Ogren, 1968)

Original Reference:

Ogren, D.E., 1968, Stratigraphy of Upper Mississippian rocks of northern Arkansas: American Association of Petroleum Geologists Bulletin, v. 52, no. 2, p. 282-294

†*WALLS FERRY LIMESTONE BED

Age:

Kinderhookian Series, Mississippian (Gordon, 1964, 1977)

Nomenclatorial Assignment(s):

Walls Ferry limestone (Gordon, 1964)

Walls Ferry Limestone Bed of the St. Joe Limestone Member of Boone Formation (Gordon, 1977)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Limestone / Formation of the †Osage Group (Branner, 1891; Simonds, 1891)

Part of the St. Joe Limestone / Formation of the Boone Limestone / Formation of the †Osage Group (Hopkins, 1893)

Part of the St. Joe Limestone Member of the Boone Limestone / Formation (Adams and Ulrich, 1904)

Replaced By:

Part of the St. Joe Limestone Member

Formal Designation:

U.S. Geological Survey:

Walls Ferry Limestone Bed of the St. Joe Limestone Member of the Boone Formation (uncertain)*

*The U.S. Geological Survey's National Geologic Map Database indicates the "Walls Ferry Limestone Bed" is valid usage. However, the latest citation is a USGS publication by Gordon (1977)

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northeastern Arkansas (Gordon, 1977)

Type Locality:

East side of the White River, five-eighths of a mile south of Walls Ferry, just south of Glenn Creek, in fractional Sec. 28, T. 14 N., R. 8 W., Independence County, Arkansas. (Gordon, 1964)

Type Section:

East side of the White River, five-eighths of a mile south of Walls Ferry, just south of Glenn Creek, in fractional Sec. 28, T. 14 N., R. 8 W., Independence County, Arkansas. (Gordon, 1964)

Primary Reference Section:

Not designated

Origin of Name:

Walls Ferry [settlement], on the White River, south of the Lafferty Creek mouth near the dam, Arkansas (Gordon, 1964)

Original Reference:

Gordon, M., Jr., 1964, Carboniferous cephalopods of Arkansas: U.S. Geological Survey Professional Paper, n. 460, p. 8

†WARSAW LIMESTONE

Age:

Meramecian Series, Mississippian

This is an age equivalent to the proposed Ritchey Formation (Mazzullo et al., 2013)

Nomenclatorial Assignment(s):

Warsaw limestone of the Boone limestone (Giles, 1935)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Limestone / Formation

Replaced By:

Part of the Boone Limestone / Formation

Ritchey Formation (Mazzullo *et al*., 2013)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Proposed to be abandoned in 2013 and replaced with the Ritchey Formation (Mazzullo *et al*.)

Regional Distribution:

Northern Arkansas; Alabama, Illinois, Indiana, Iowa, Kentucky, Mississippi, Missouri, and Tennessee (Giles, 1935; Keroher *et al*., 1966)

Type Locality:

Near Warsaw, Hancock County, Illinois (Hall, 1857)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably, Warsaw [town], Hancock County, Illinois

Original Reference:

Hall, J., 1857, On the Carboniferous limestones of the Mississippi Valley: Proceedings of the American Association for the Advancement of Science, v. 10, pt. 2, p. 54-56

†WASHBURN SANDSTONES

Age:

Atokan Series, Pennsylvanian

This is an age equivalent to part of the Atoka Formation (Wilmarth, 1938; Keroher *et al*., 1966)

Nomenclatorial Assignment(s):

Washburn sandstones of the Appleton Stage of the Coal Measures (Winslow *in* Stevenson, 1896)

Sub-Division(s):

None

Previous Name(s):

Part of the †Lower or Eastern Coal Bearing Division (Winslow, 1888)

Part of the unnamed "sandstones and shales" (Griswold, 1892)

Replaced By:

Part of the †Winslow Formation (Adams and Ulrich, 1904)

Middle part of the Atoka Formation (Wilmarth, 1938)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Western Arkansas; Oklahoma (Wilmarth, 1938; Keroher *et al*., 1966)

Type Locality:

Not designated

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated. Presumably from Washburn [town], Sebastian County, Arkansas (Wilmarth, 1938; Keroher *et al*., 1966)

Original Reference:

Winslow, A.H., *in* Stevenson, J.J., 1896, Notes on the geology of Indian Territory: Transactions of the New York Academy of Sciences, v. 15, p. 51

†WASHINGTON SHALE & SANDSTONE

Age:

Morrowan Series, Pennsylvanian

This is an age equivalent to the Hale Formation and part of the Bloyd Formation (Adams and Ulrich, 1905; McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Washington shale and sandstone of the Boston group (Branner, 1891; Simonds, 1891)

Washington shale and sandstone of the Morrow formation (Adams and Ulrich, 1904)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

Hale Formation (Henbest, 1962) and the lower part of the Bloyd Formation (Adams and Ulrich, 1905)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas; Oklahoma (Keroher *et al*., 1966)

Type Locality:

Washington Mountain, Washington County, Arkansas (Simonds, 1891)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Washington Mountain [topographic feature], Washington County, Arkansas (Simonds, 1891)

Original Reference:

Branner, J.C., 1891, Introduction: Arkansas Geological Survey Annual Report 1888, v. 4, p. xiii

Simonds, F.W., 1891, The geology of Washington County: Arkansas Geological Survey Annual Report 1888, v. 4, p. 26, 75-82

WEDINGTON SANDSTONE MEMBER

Age:

Chesterian Series, Mississippian (Haley *et al*., 1976, revised 1993)

Nomenclatorial Assignment(s):

Wedington sandstone (Adams and Ulrich, 1904)

Wedington sandstone member of the Fayetteville formation (Adams and Ulrich, 1905)

Wedington sandstone member of the Fayetteville shale (Branner, 1927)

Wedington sandstone of the Fayetteville formation (Croneis, 1930a)

WEDDINGTON SANDSTONE of the Fayetteville formation (Croneis, 1930b). This is a typo

Wedington Member of the Fayetteville Shale (Godo *et al*., 2014, p. 2)

Sub-Division(s):

None

Previous Name(s):

Simonds (1891) miscorrelated and mislabeled the beds of the Wedington Sandstone with that of the Batesville Sandstone (Adams and Ulrich, 1904). Simonds (1891) misapplied the name Marshall Shale to that of the Fayetteville Shale.

Replaced By:

None

Formal Designation:

U.S. Geological Survey:

Wedington Sandstone Member of the Fayetteville Shale (formal)

Arkansas Geological Survey:

Wedington Sandstone Member of the Fayetteville Shale (formal)

Regional Distribution:

Northern Arkansas; Oklahoma (Keroher *et al*., 1966)

Type Locality:

Wedington Mountain, Washington County, Arkansas (Adams and Ulrich, 1905)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Not stated (Adams and Ulrich, 1904). Presumably, Wedington Mountain [topographic feature], Benton and Washington counties, Arkansas (Adams and Ulrich, 1905)

Original Reference:

Adams, G.I. and Ulrich, E.O., 1904, Zinc and lead deposits of northern Arkansas: U.S. Geological Survey Professional Paper, n. 24, p. 27

†WESLEY FORMATION

Age:

Morrowan Series, Pennsylvanian

This is an age equivalent of part of the Jackfork Group (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Jackfork Group (Walthall, 1967)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed “sandstones and shales” (Griswold, 1892)

Part of the Jackfork Sandstone / Formation (Purdue, 1909a)

†Brushy Knob Formation of the Jackfork Group (Morris, 1965)

Replaced By:

†Brushy Knob Formation of the Jackfork Group (Morris, 1971)

Part of the Jackfork Sandstone / Formation. Wesley Formation was discarded.

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Southeastern Oklahoma (Keroher *et al*., 1966)

Type Locality:

Near Wesley, E½ SE¼ NW¼ Sec. 20, T. 1 N., R. 13 E., Atoka County, Oklahoma (Harlton, 1938)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Wesley [town], Atoka County, Oklahoma (Harlton, 1938)

Original Reference:

Harlton, B.H., 1938, Stratigraphy of the Bendian of the Oklahoma salient of the Ouachita Mountains: American Association of Petroleum Geologists Bulletin, v. 22, n. 7, p. 886-889

WHITE RIVER TRIPOLITE FACIES

Age:

Osagean Series, Mississippian (Mazzullo *et al*., 2013)

Nomenclatorial Assignment(s):

White River tripolite facies of the Reeds Spring Formation of the Boone Group (Mazzullo *et al*., 2013)

Sub-Division(s):

None

Previous Name(s):

Part of the Boone Formation (Mazzullo *et al*., 2013)

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

White River tripolite facies of the Reeds Spring Formation of the Boone Group. Proposed in 2013 (Mazzullo *et al*., 2013). As of yet, this name has not been published in any U.S. Geological Survey or Arkansas Geological Survey publications

Regional Distribution:

Northwestern Arkansas (Mazzullo *et al*., 2013)

Type Locality:

Roadcut on U.S. Highway 412 in Sec. 1, T. 17 N., R. 29 W., Washington County, Arkansas, where it crosses the White River (Mazzullo *et al*., 2013)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

White River [river], Washington County, Arkansas (Mazzullo *et al*., 2013)

Original Reference:

Mazzullo, S.J., Boardman, D.R., Wilhite, B.W., Godwin, C., Morris, B.T., 2013, Revisions of outcrop lithostratigraphic nomenclature in the lower to middle Mississippian subsystem (Kinderhookian to basal Meramecian Series) along the shelf-edge in southwest Missouri, northwest Arkansas, and northeast Oklahoma: Oklahoma City Geological Society Shale Shaker, v. 63, n. 6, p. 414-454

†WILDHORSE MOUNTAIN FORMATION

Age:

Morrowan Series, Pennsylvanian

This is an age equivalent to part of the Jackfork Group (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Jackfork Group (Walthall, 1967)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed “sandstones and shales” (Griswold, 1892)

Part of the Jackfork Sandstone

†Irons Fork Mountain of the Jackfork Group (Morris, 1965)

Replaced By:

†Irons Fork Mountain of the Jackfork Group (Morris, 1971)

Part of the Jackfork Sandstone / Formation. The Wildhorse Mountain Formation was discarded

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Abandoned

Regional Distribution:

Southeastern Oklahoma (Keroher *et al*., 1966)

Type Localities:

Northwest side of Prairie Mountain, Sections 25 and 26, T. 1 S., R. 12 E., Pushmataha County, Oklahoma (Harlton, 1938)

Type Section:

Wildhorse Mountain, T. 2 S., R. 16 E., near Moyers, Pushmataha County, Oklahoma (Harlton, 1938)

Primary Reference Section:

Not designated

Origin of Name:

Wildhorse Mountain [topographic feature], Pushmataha County, Oklahoma (Harlton, 1938)

Original Reference:

Harlton, B.H., 1938, Stratigraphy of the Bendian of the Oklahoma salient of the Ouachita Mountains: American Association of Petroleum Geologists Bulletin, v. 22, n. 7, p. 856-857

†WINSLOW FORMATION / GROUP

Age:

Atokan to Desmoinesian Series, Pennsylvanian

Nomenclatorial Assignment(s):

Winslow formation (Adams and Ulrich, 1904)

Winslow Group (Branner, 1927)

Sub-Division(s):

Winslow Group:

Atoka Formation (Branner, 1927)

Hartshorne Sandstone (Branner, 1927)

Previous Name(s):

†Millstone Grit (Adams and Ulrich, 1904)

Replaced By:

†Spadra Shale, Hartshorne Sandstone, and Atoka Formation (Collier, 1907). This was applied to the coal fields in west-central Arkansas. While the †Winslow Formation remained in use in the Ozark Plateau area

Atoka Formation (Purdue, 1909a). Abandoned and replaced the †Winslow Formation in the remaining area of northern Arkansas

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northwestern Arkansas; Oklahoma (Keroher and others, 1966)

Type Locality:

Winslow, Washington County, Arkansas (Henbest, 1953)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Winslow [town], Washington County, Arkansas (Wilmarth, 1938)

Original Reference:

Adams, G.I. and Ulrich, E.O., 1904, Zinc and lead deposits of northern Arkansas: U.S. Geological Survey Professional Paper, n. 24, p. 29

WITTS SPRINGS FORMATION

Age:

Morrowan Series, Pennsylvanian (Hutto and Johnson, 2015b, 2015c)

Nomenclatorial Assignment(s):

Witts Springs Formation (Glick *et al*., 1964)

Sub-Division(s):

None

Previous Name(s):

Undifferentiated Bloyd Shale and Hale Formation

Replaced By:

None

Formal Designation:

U.S. Geological Survey: Witts Springs Formation (uncertain)*

*The U.S. Geological Survey's National Geologic Map Database indicates the "Witts Springs Formation" is valid usage. However, the latest citation is a non-USGS publication by Eccher *et al*. (1983)

Arkansas Geological Survey: Witts Springs Formation (formal)

Regional Distribution:

Northern Arkansas (Glick *et al*., 1964)

Type Locality:

Witts Springs, Searcy County, Arkansas (Glick *et al*., 1964)

Type Section:

From N½ NW¼ NE¼ NE¼ Sec. 12, T. 13 N., R. 18 W. to the near middle of the south edge of SE¼ Sec. 1, T. 13 N., R. 18 W., Searcy County, Arkansas (Glick *et al*., 1964)

Primary Reference Section:

E½ Sec. 11, T. 13 N., R. 18 W., Searcy County, Arkansas (Glick *et al*., 1964)

Origin of Name:

Witts Springs [town], Searcy County, Arkansas (Glick *et al*., 1964)

Original Reference:

Glick, E.E., Frezon, S.E., and Gordon, M., Jr., 1964, Witts Springs formation of Morrow age in the Snowball quadrangle, north-central Arkansas: U.S. Geological Survey Bulletin, n. 1194-D, p. D1-D16

WOMBLE SHALE / FORMATION

Age:

Whiterockian to Mohawkian Series, Ordovician (Krueger, 2002; Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Womble shale (Miser, 1918)

Womble formation (Croneis, 1930)

Sub-Division(s):

None

Previous Name(s):

Part of the unnamed "shales, limestones, massive quartzose sandstones, cherty blue limestones, with gray, black, and yellow shales at the bottom" (Griswold, 1892)

Part of the upper †Ouachita Shale and the †Stringtown Shale (Miser, 1918)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Womble Shale	(formal)

*The U.S. Geological Survey's National Geologic Map Database indicates the "Womble Formation" is valid usage. However, the only citation available is McFarland (1998, revised 2004)

Arkansas Geological Survey:	Womble Formation	(formal)
	Womble Shale	(formal)

Regional Distribution:

West-central Arkansas; Oklahoma (McFarland, 1998, revised 2004)

Type Locality:

Womble, Montgomery County, Arkansas (Miser, 1918)

Type Section:

Crystal Mountain, Montgomery County, Ouachita National Forest, Arkansas (Miser (March, 1937) *in* Wilmarth (1938); Keroher *et al*., 1966)

Primary Reference Section:

Not designated

Origin of Name:

Womble [town; now called Norman], Montgomery County, Arkansas (Miser, 1918)

Original Reference:

Miser, H.D., 1918, Manganese deposits of the Caddo Gap and De Queen quadrangles, Arkansas, *in* Ransome, F.L., Burchard, E.F., and Gale, H.S. (eds.), 1918, Contributions to economic geology (short papers and preliminary reports), 1917, part 1, Metals and nonmetals except fuels: U.S. Geological Survey Bulletin, n. 660-C, p. 67

WOOLSEY MEMBER

Age:

Morrowan Series, Pennsylvanian (McFarland, 1998, revised 2004)

Nomenclatorial Assignment(s):

Woolsey Member of the Bloyd Shale of the Morrow Group (Henbest, 1953)

Woolsey Member of the Bloyd Shale (Henbest, 1962)

Sub-Division(s):

Baldwin coal bed (Croneis, 1930a, 1930b)

†Zion Chapel coal bed (Henbest, 1953)

Previous Name(s):

Part of the Boston Group (Branner, 1891; Simonds, 1891)

Part of the Morrow Formation (Adams and Ulrich, 1904)

Part of the Bloyd Formation of the Morrow Group (Purdue, 1907b)

Part of the Bloyd Formation (Henbest, 1962)

Replaced By:

None

Formal Designation:

U.S. Geological Survey:	Woolsey Member of the Bloyd Formation / Shale	(formal)
Arkansas Geological Survey:	Woolsey Member of the Bloyd Formation / Shale	(formal)

Regional Distribution:

Northwestern Arkansas (Keroher *et al*., 1966)

Type Locality:

Bloyd Mountain, Washington County, Arkansas (Henbest, 1953)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Woolsey Station [town], Washington County, Arkansas (Henbest, 1953)

Original Reference:

Henbest, L.G., 1953, Morrow group and lower Atoka formation of Arkansas: American Association of Petroleum Geologists Bulletin, v. 37, n. 8, p. 1943-1944, 1948

†WYMAN SANDSTONE

Age:

Chesterian Series, Mississippian (Keroher *et al*., 1966)

Nomenclatorial Assignment(s):

Wyman sandstone (Branner, 1891; Simonds, 1891)

Sub-Division(s):

None

Previous Name(s):

None

Replaced By:

Batesville Sandstone / Formation. In early reports, the †Wyman Sandstone was mistakenly applied to the beds that are now known as the Batesville Sandstone / Formation. The Batesville Sandstone / Formation of these early reports was mistakenly applied to the beds that are now known as the Wedington Sandstone Member of the Fayetteville Shale.

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northern Arkansas; Oklahoma (Keroher *et al*., 1966)

Type Locality:

Near Wyman, Washington County, Arkansas (Simonds, 1891)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Wyman [railroad station], Washington County, Arkansas (Simonds, 1891). Name credited to Simonds (Branner, 1891)

Original Reference:

Branner, J.C., 1891, Introduction: Arkansas Geological Survey Annual Report 1888, v. 4, p. xiii

Simonds, F.W., 1891, The geology of Washington County: Arkansas Geological Survey Annual Report 1888, v. 4, p. 26, 38-41

†YELLVILLE LIMESTONE / GROUP

Age:

Yellville Limestone:

Ibexian to Whiterockian Series, Ordovician

This is an age equivalent to the Cotter and Powell Formations (Keroher *et al*., 1966; Ethington *et al*., 2012)

Yellville Group:

Ibexian to Whiterockian Series, Ordovician

This is an age equivalent to the Jefferson City, Cotter, and Powell Formations (Ethington *et al*., 2012)

Nomenclatorial Assignment(s):

Yellville formation (Adams and Ulrich, 1904)

Yellville Group (Hedden, 1976)

Sub-Division(s):

Yellville Limestone:

Black Ledge Chert Member (Hedden, 1976)

Yellville Group:

Cotter Dolostone (Hedden, 1976)

Jefferson City Dolostone (Hedden, 1976)

Powell Formation (Hedden, 1976)

Smithville Lithosome of the Powell Formation (Hedden, 1976)

Black Rock Lithosome of the Powell Formation (Hedden, 1976)

Previous Name(s):

Part of the unnamed "magnesian limestone, sandstone, cherts, etc." (Griswold, 1892)

Replaced By:

Everton Formation (Giles, 1930), Powell Limestone (Purdue and Miser, 1915; Giles, 1930), and Cotter Dolomite (Purdue and Miser, 1915; Giles, 1930)

Formal Designation:

U.S. Geological Survey: Abandoned

Arkansas Geological Survey: Abandoned

Regional Distribution:

Northern Arkansas; Missouri (Keroher *et al*., 1966)

Type Locality:

Near Yellville, Marion County, Arkansas

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Yellville [town], Marion County, Arkansas (Wilmarth, 1938)

Original Reference:

Adams, G.I. and Ulrich, E.O., 1904, Zinc and lead deposits of northern Arkansas: U.S. Geological Survey Professional Paper, n. 24, p. 18, 32, 90, 93

†ZION CHAPEL COAL

Age:

Morrowan Series, Pennsylvanian (Henbest, 1953)

Nomenclatorial Assignment(s):

Zion Chapel coal of the Woolsey Member of the Bloyd Formation of the Morrow Group (Henbest, 1953)

Sub-Division(s):

None

Previous Name(s):

Part of the "coal-bearing shale" of the †Boston Group (Branner, 1891; Simonds, 1891)

Part of the "coal-bearing shale" of the †Morrow Formation (Adams and Ulrich, 1904)

Part of the Bloyd Formation / Shale of the †Morrow Group (Purdue, 1907b)

Replaced By:

Baldwin coal bed (Croneis, 1930a, 1930b)

Formal Designation:

U.S. Geological Survey: Not in Use

Arkansas Geological Survey: Not in Use

Regional Distribution:

Northwestern Arkansas (Henbest, 1953)

Type Locality:

Near Zion Chapel Community, E½ Sec. 20, T. 17 N., R. 29 W., and W½ Sec. 21, T. 17 N., R. 29 W., Washington County, Arkansas (Henbest, 1953)

Type Section:

Not designated

Primary Reference Section:

Not designated

Origin of Name:

Presumably, Zion Chapel (church no longer exists; now known as Zion Cemetery), Sec. 20, T. 17 N., R. 29 W., Washington County, Arkansas

Original Reference:

Henbest, L.G., 1953, Morrow Group and lower Atoka Formation of Arkansas: American Association of Petroleum Geologists, Bulletin, v. 37, n. 8, p. 1943, 1944, 1945, 1953

OTHER NAMES

The early literature also records several other names for coal beds that have since become discarded. However, there is a lack of information and correlation to the current nomenclature regarding these names. Some of these names could be interpreted as a name of a distinct coal bed named after a coal mine, or a descriptive name indicating the coal mine that the coal originated from. This uncertainty of the intended usage of some of these names suggest they should be, at the very least, considered among the preceding names. Other names are certainly informal names of coal beds, but no further information has been found to correlate to the present stratigraphic nomenclature. These names (with a reference source) include:

Allister coal (Winslow, 1888)

Altus coal seam (Gibson, 1936)

Baxley's coal (Winslow, 1888)

Bernice coal seam (Gibson, 1936)

Bocquin & Reutzel coal (Winslow, 1888)

Bonanza coal seam (Gibson, 1936)

Carlan coal (Winslow, 1888)

Clairborne's coal (Winslow, 1888)

Coal Hill coal (Winslow, 1888)

Connellsville coal (Winslow, 1888)

Denning coal seam (Gibson, 1936)

Eureka coal (Winslow, 1888)

Excelsior coal seam (Gibson, 1936)

Fellker coal (Winslow, 1888)

Greenwood coal (Winslow, 1888)

Gwyn's coal (Winslow, 1888)

Hackett City coal (Winslow, 1888)

Harkreader's coal (Winslow, 1888)

Jenny Lind coal (Winslow, 1888)

McConnel's coal (Winslow, 1888)

Midland coal seam (Gibson, 1936)

Moomaw's coal (Winslow, 1888)

Ouita coal (Winslow, 1888)

Page's coal (Winslow, 1888)

Petty's coal (Winslow, 1888)

Shinn's coal (Winslow, 1888)

Spadra coal / coal seam (Winslow, 1888; Gibson, 1936)

Watt's coal (Winslow, 1888)

III. CONCLUSION

Of the 215 names that have been proposed for the Paleozoic beds in Arkansas, only 76 are currently in use (Table 1). Ten of these are accepted by the Arkansas Geological Survey, but not the U.S. Geological Survey, while two of these are accepted by the USGS, but not the AGS (Table 2, appendix). Seven names have recently been proposed, but have yet to be accepted into the literature, and another 16 have uncertainties or discrepancies between current usage in the U.S. Geological Survey and the Arkansas Geological Survey that needs resolving (Table 3, appendix). The remaining 116 names have either been abandoned by the USGS and the AGS, or have not been used by either agency. Several of these 116 names have been proposed, but not used in the literature, effectively making them unofficially abandoned. An additional 28 names related to the coal beds are not accounted into these numbers, as there is very little information on their intended usage. If all 28 names were intended to be coal bed names, then all are now considered to be abandoned.

Nomenclatorial usage in each geologic province is skewed heavily towards the Ozarks Plateaus. 130 names have been used in the Ozarks, where several transgressive-regressive cycles developed several thin, distinctive beds. The Arkansas River Valley province has 40 names, all of which are related to the coal beds of Desmoinesian age (Pennsylvanian). This River Valley tally does not include the 28 uncertain coal bed names. The Ouachita Mountains has the fewest total named beds (37) due to the thick intervals of relatively similar lithologies. Eight other names are related to, and include, the Atoka Formation, which is found in both the Ozark Plateaus and Arkansas River Valley provinces.

	Current Status				
Province	In use currently	Abandoned or not used	Proposed, but not currently in use	Conflicting use between the USGS and AGS	Total (per province)
Ozark Plateaus	49	67	7	7	130
Arkansas River Valley	15	14	0	8	37
Ouachita Mountains	11	28	0	1	40
Ozark Plateaus and Ark. River Valley	1	7	0	0	8
Total (per status)	76	116	7	16	215

Table 1. Number of lithostratigraphic names used in Arkansas for each Paleozoic province divided into current status (i.e. currently used, abandoned or not used, recently proposed, or an ongoing conflict of usage between the USGS and AGS).

For all proposed names in the future, adherence to the latest North American Code of Stratigraphic Nomenclature is a requirement to be considered for formal recognition. The current code outlines all of the necessary prerequisites, including but not limited to, designating a type section or type locality, priority of existing names, mappability, and designating rank (NACSN, 2005). Also, stated in the Code, for those units without a primary reference section, one can be designated, particularly for units whose type section has been destroyed or is otherwise deemed to be inaccessible (NACSN, 2005). Although not mentioned in the Code, the inclusion of the name's origin is suggested in order to avoid confusion when a geographic locality changes name or when a name is used for two geographic localities (e.g. county and town).

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V. APPENDIX

Name	In use by the USGS?	In Use by the AGS?
Black Ledge Chert	No	Yes
Chattanooga Shale Member	No	Yes
Compton Limestone	No	Yes
Imo Shale / Interval	No	Yes
Lower Hartshorne Coal Bed	No	Yes
McAlester Coal Bed	No	Yes
Northview Shale	No	Yes
Pierson Limestone	No	Yes
Reeds Spring Member	Yes	No
Ruddell Shale	No	Yes
Short Creek Oolite	No	Yes
Smithville Formation	Yes	No

Table 2. Names that are in use by either the U.S. Geological Survey or the Arkansas Geological Survey

Name	In use by the USGS?	In use by the AGS?
Brushy Knob Formation	No	Uncertain
Caney Shale	Uncertain	No
Chickasaw Creek Member	Uncertain	Uncertain
Gap Ridge Sandstone Member	Uncertain	No
Grand Falls Chert Member	Uncertain	No
Hatton Tuff Lentil / Member	Uncertain	Yes
Irons Fork Mountain Formation	No	Uncertain
Krebs Group	Uncertain	No
Moyers Member	Uncertain	No
Sylamore Sandstone Member	Uncertain	Yes
Tenmile (Ten Mile) Creek Member/Formation	Uncertain	Uncertain
Walls Ferry Limestone Bed	Uncertain	No
Witts Springs Formation	Uncertain	Yes

Table 3. List of names that have uncertainty to their current status.

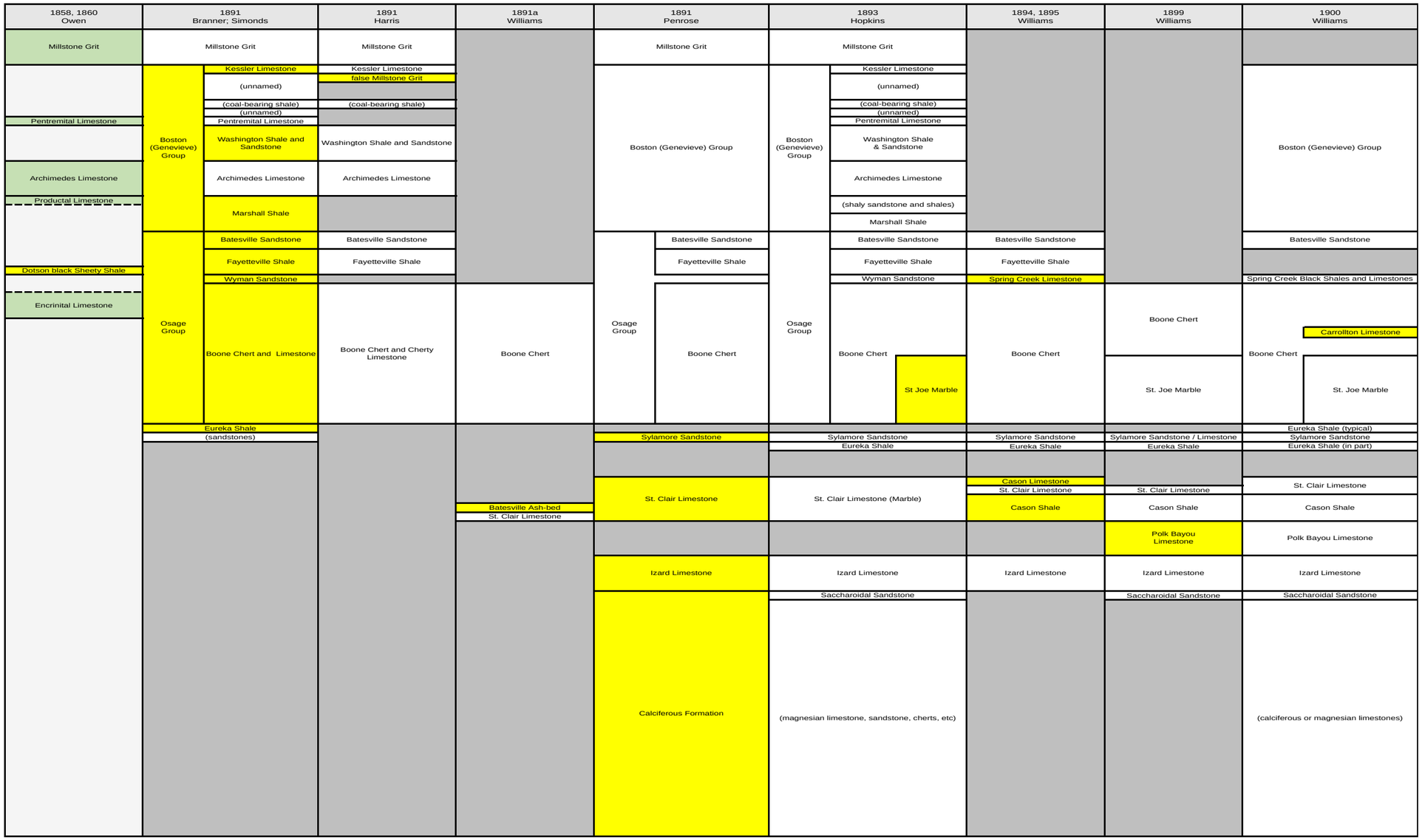


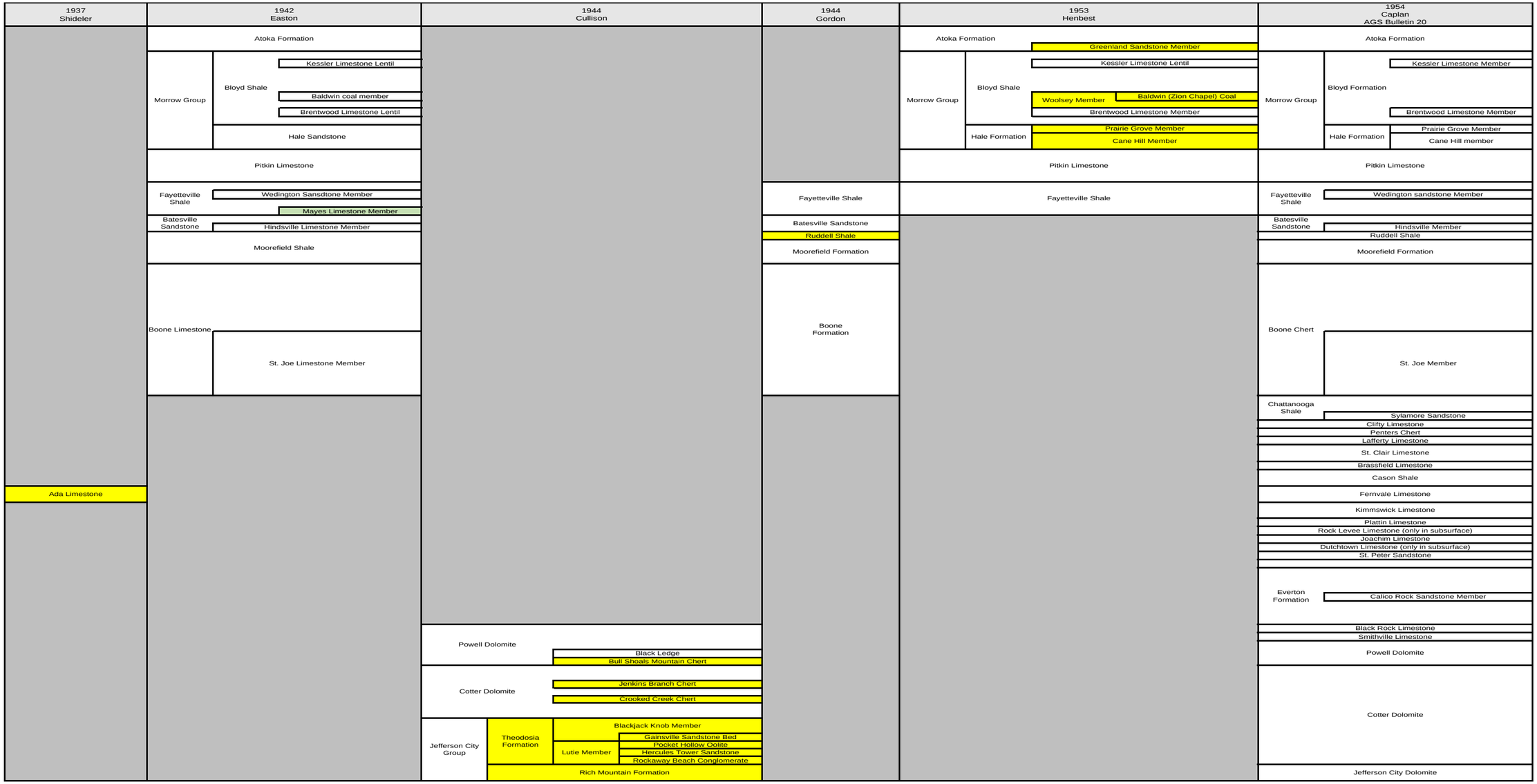
Figure 4. Generalized stratigraphic columns of the Ozark Plateaus province with respect to the nomenclatorial boundaries. Yellow highlighted names indicate the first use of a name that originated in Arkansas. Green highlighted names indicate the first use in Arkansas of a name that originated outside of Arkansas. Shaded areas indicate intervals that were not present in the study. The stippled area of Owen (1858, 1860) indicate uncertainty to his stratigraphic boundaries of his nomenclature. The following have not been correlated and included in this chart: Zone C, Zone P, Zone S, and Zone W of the Atoka Formation, and the Gilbert Shales.

1904 Adams and Ulrich	1905 Adams and Ulrich	1906 Taff	1907b Purdue	1907a Purdue	1911 Ulrich	1916 Purdue & Miser
Winslow Formation	Winslow Formation	Winslow Formation	Winslow Formation			Winslow Formation
Morrow Formation: (shale)	Morrow Formation: Kessler Limestone Lentil	Morrow Formation: Kessler Limestone	Morrow Group: Bloyd Shale: Kessler Limestone Lentil			Morrow Group: Bloyd Shale: Kessler Limestone Member
Morrow Formation: Kessler Limestone						
Morrow Formation: (unnamed)						Bloyd Shale: Brentwood Limestone Member
Morrow Formation: (coal-bearing shale)	Morrow Formation: Brentwood Limestone Lentil	Morrow Formation: (coal bearing shale)	Morrow Group: Bloyd Shale: Brentwood Limestone Lentil			
Morrow Formation: (unnamed)						
Morrow Formation: Brentwood Limestone		Morrow Formation: Brentwood Member				
Morrow Formation: Washington Shale and Sandstone	Morrow Formation: Hale Sandstone Member	Morrow Formation: Hale Sandstone Member	Morrow Group: Hale Formation			Morrow Group: Hale Formation
Pitkin Limestone	Pitkin Limestone	Pitkin Limestone	Pitkin Limestone		Pitkin Limestone	Pitkin Limestone
Fayetteville Formation: Wedington Sandstone Member	Fayetteville Formation: Wedington Sandstone Member	Fayetteville Formation	Fayetteville Shale: Wedington Sandstone Member		Fayetteville Formation	Fayetteville Shale: Wedington Sandstone Member
Batesville Sandstone	Batesville Sandstone				Batesville Sandstone	Batesville Sandstone: Hindsville Limestone Member
Moorefield Shale					Moorefield Shale	
Moorefield Shale: Spring Creek Limestone						
					Short Creek Oolite	
Boone Limestone: St. Joe Limestone Member	Boone Formation: St. Joe Limestone Member	Boone Formation	Boone Limestone: (St. Joe not exposed)	St. Joe Limestone	Boone Chert: St. Joe Member	Boone Limestone: St. Joe Limestone Member
Noel Shale	Chattanooga Shale: Sylamore Sandstone Member				Chattanooga Formation: Sylamore Sandstone Member	Chattanooga Shale: Sylamore Sandstone Member
Sylamore Formation (confused with the Key Sandstone) (McKnight, 1935)				Sylamore Sandstone		Clifty Limestone
St. Clair Limestone		St. Clair Marble			St. Clair Limestone	
					Brassfield Limestone	
Cason Shale					Cason Shale	Cason Shale
Polk Bayou Limestone					Fernvale Limestone	Fernvale Limestone
Izard Limestone					Kimmswick Limestone	
Key Sandstone					Izard Limestone: Lowville Limestone	Jasper Limestone
					Joachim Limestone	Joachim Limestone
(confused with the Key Sandstone) (McKnight, 1935)		St. Peter Sandstone		St. Peter Sandstone	St. Peter Sandstone	St. Peter Sandstone
(Everton confused with the Izard Limestone) (Purdue and Miser, 1916)				Everton Limestone	Everton Limestone	Everton Limestone: Kings River Sandstone Member
						Sneeds Limestone Lentil
Yellville Limestone	Yellville Formation	Yellville Formation			Yellville Formation	Powell Limestone
						Cotter Dolomite
					Jefferson City Dolomite	

Figure 4 (continued)

1921 Miser	1927 Branner	1929 Miser & Stone	1930a; 1930b Croneis	1934 Cline	1935 Giles	1935 McKnight
	Winslow Group: Hartshorne Sandstone; Atoka Formation	Winslow Group: Spadra Shale; Hartshorne Sandstone; Atoka Formation	Winslow: Spadra; Hartshorne; Atoka Formation		Winslow Formation	Winslow Formation
	Morrow Group: Bloyd Shale: Kessler Limestone Member; Brentwood Limestone Member; Hale Formation	Morrow Group: Bloyd Shale: Kessler Limestone Member; Brentwood Limestone Member; Hale Formation	Morrow: Bloyd Shale: Kessler Limestone Member; Baldwin Coal; Brentwood Limestone Member; Hale Formation		Morrow Group: Bloyd Shale; Hale Formation	Morrow Group: (absent); Hale Formation
	Pitkin Limestone	Pitkin Limestone	Pitkin Limestone		Pitkin Limestone	Pitkin Limestone
	Fayetteville Shale: Wedington Sandstone Member	Fayetteville Shale: Wedington Sandstone Member	Fayetteville Shale: Wedington Sandstone Member; Basal Limestone ("Mayes" fm)		Fayetteville Shale	Fayetteville Shale: Wedington Sandstone Member
Batesville Sandstone	Batesville Sandstone: Hindsville Limestone Member	Batesville Sandstone: Hindsville Limestone Member	Batesville Sandstone: Hindsville Limestone Member		Batesville Sandstone; Hindsville Limestone	Batesville Sandstone: Hindsville Limestone Member
Moorefield Shale; Spring Creek Limestone	Moorefield Shale	Moorefield Shale	Moorefield Shale		Moorefield Shale; Spring Creek Limestone	
Boone Chert	Boone Formation: Short Creek Oolite Member; St. Joe Limestone Member	Boone Formation: St. Joe Marble Member	Boone Limestone: St. Joe Limestone Member	Keokuk Formation; Burlington Formation; Reeds Spring Formation: St. Joe Formation	Boone Limestone: Warsaw Limestone; Short Creek Oolite; Keokuk Limestone; Grand Falls Chert; Burlington Limestone; Fern Glen Limestone; St. Joe Limestone	Boone Formation: St. Joe Limestone Member
Chattanooga Shale	Chattanooga Shale: Sylamore Sandstone Member	Chattanooga Shale: Sylamore Sandstone Member	Chattanooga Shale: Sylamore Sandstone		Chattanooga Shale: Sylamore Sandstone	
Clifty Limestone	Clifty Limestone	Clifty Limestone	Clifty Limestone			
Penters Chert	Penters Chert	Penters Chert	Penters Chert			
Lafferty Limestone	Lafferty Limestone	Lafferty Limestone	Lafferty Limestone			
St. Clair Limestone	St. Clair Limestone	St. Clair Marble	St. Clair Limestone			St. Clair Limestone
	Brassfield Limestone	Brassfield Limestone	Brassfield Limestone			Brassfield Limestone
Cason Shale	Cason Shale	Cason Shale	Cason Shale			Cason Shale
Fernvale Limestone	Fernvale Limestone	Fernvale Limestone	Fernvale Limestone			Fernvale Limestone
Kimmswick Limestone	Kimmswick Limestone	Kimmswick Limestone	Kimmswick Limestone			Kimmswick Limestone
Plattin Limestone	Plattin Limestone	Plattin Limestone	Plattin Limestone			Plattin Limestone
						Joachim Dolomite
						St. Peter Sandstone
	Jasper Limestone	Jasper Limestone	Jasper Limestone			Jasper Limestone
Joachim Limestone	Joachim Limestone	Joachim Limestone	Joachim Limestone			
St. Peter Sandstone	St. Peter Sandstone	St. Peter Sandstone	St. Peter Sandstone			Everton Formation: Newton Sandstone Member
(older rocks are exposed, but not described)	Everton Limestone: King's River Sandstone Member; Sneeds Limestone Lentil	Everton Limestone: Calico Rock Sandstone Member; Kings River Sandstone Member	Everton Limestone: Kings River Sandstone Member; Sneeds Limestone Lentil			
	Powell Limestone	Black Rock Limestone; Smithville Limestone; Powell Limestone	Powell Limestone			Powell Dolomite: Black Ledge
	Cotter Dolomite	Cotter Dolomite	Cotter Dolomite			Cotter Dolomite
	Jefferson City Dolomite	Jefferson City Dolomite	Jefferson City Dolomite			Jefferson City Dolomite

Figure 4 (continued)



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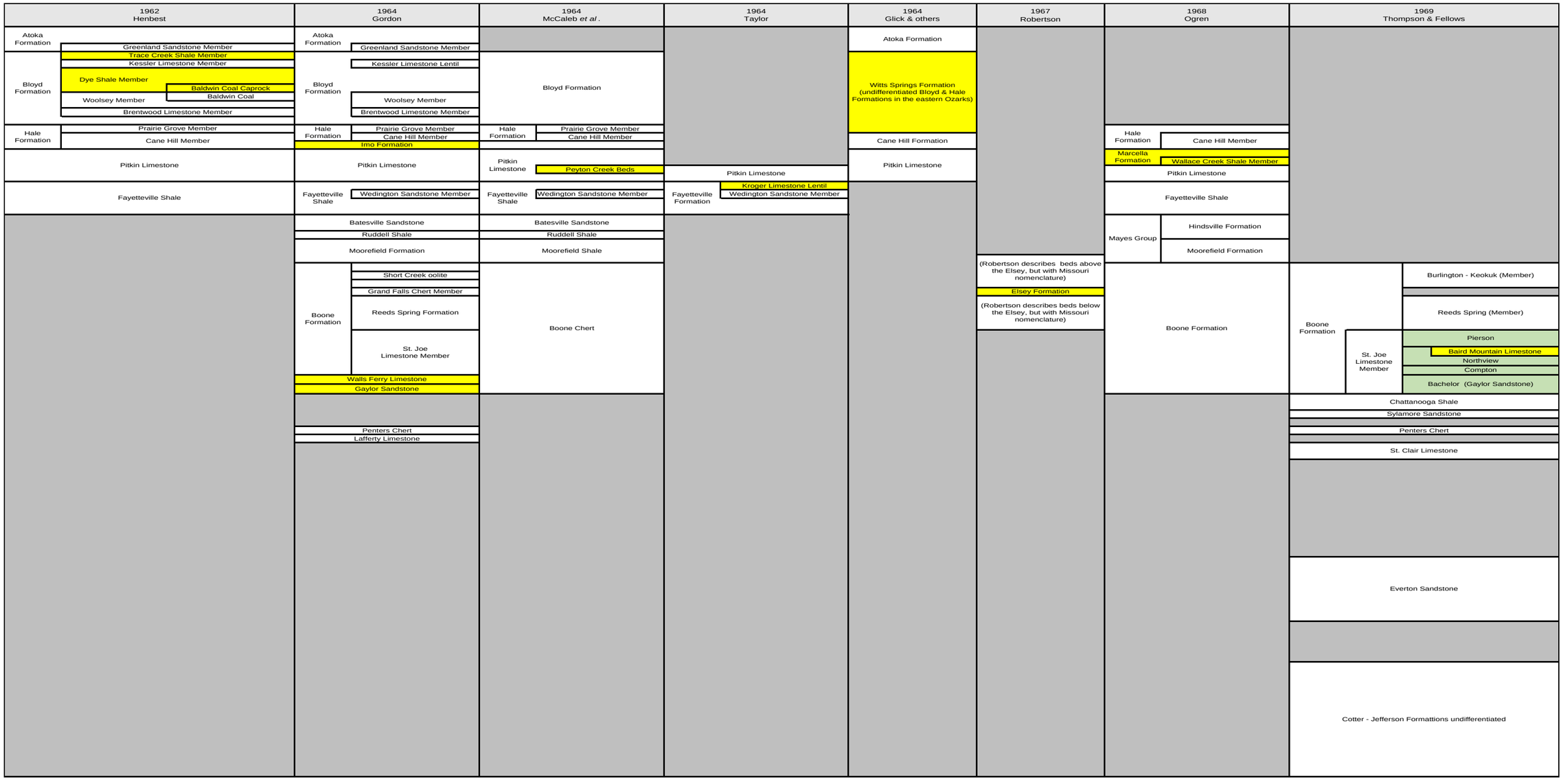

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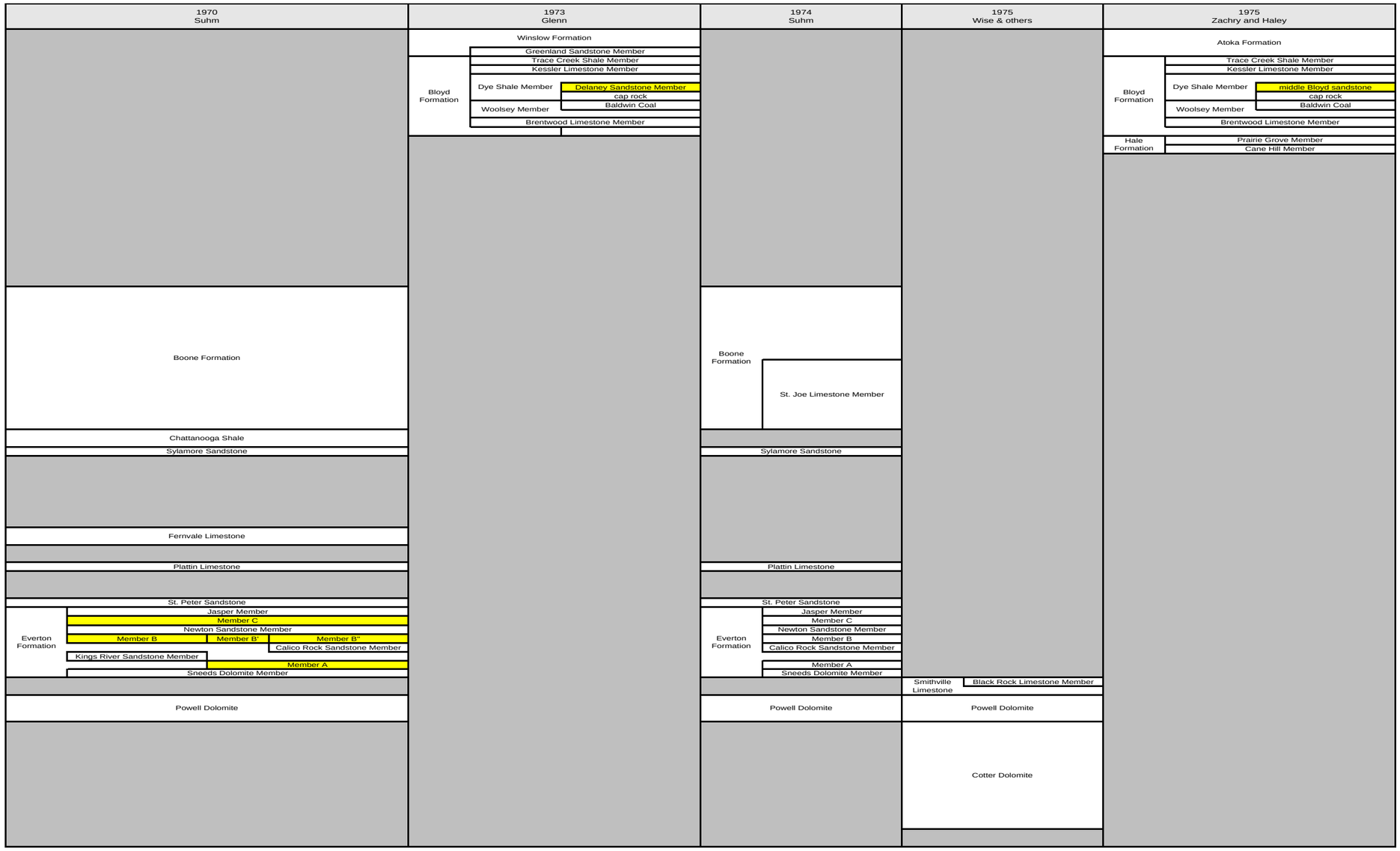
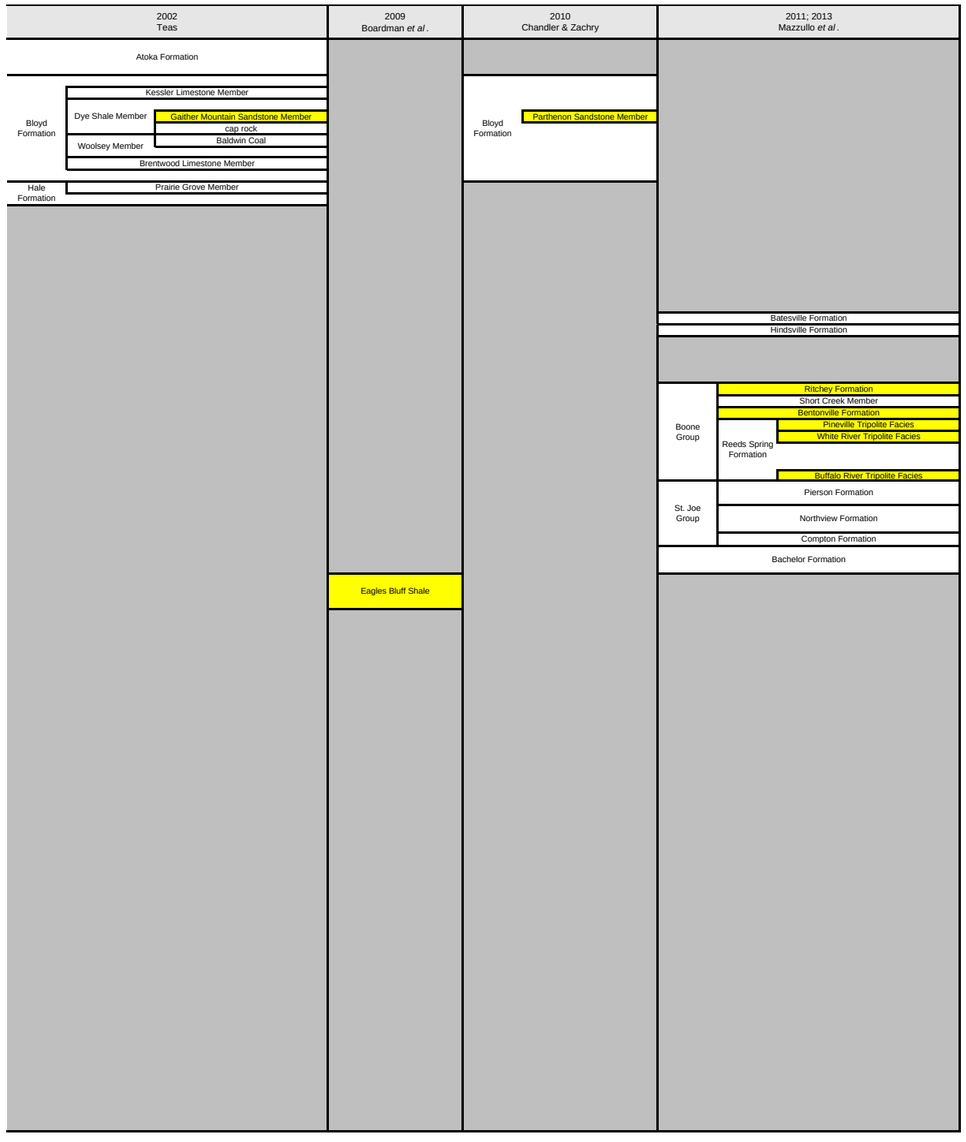


Figure 4 (continued)

1976 Hedden	1980 Hedden	1982 Crowder	1988 Llopis *et al* .	1998 McFarland
		Atoka Formation		Atoka Formation
		Trace Creek Shale Member		Trace Creek Shale Member
		Kessler Limestone Member		Kessler Limestone Member
		Bloyd Formation: Dye Shale Member: Gaither Sandstone Member		Bloyd Formation / Shale: Dye Shale Member: middle Bloyd sandstone
		Bloyd Formation: Dye Shale Member: Baldwin cap rock		Bloyd Formation / Shale: Dye Shale Member: cap rock
		Bloyd Formation: Woosley Member: Baldwin coal		Bloyd Formation / Shale: Woolsey Member: Baldwin Coal
		Bloyd Formation: Woosley Member		Bloyd Formation / Shale: Woolsey Member
		Brentwood Limestone Member		Brentwood Limestone Member
		Hale Formation: Prairie Grove Member		Hale Formation: Prairie Grove Member
		Hale Formation		Hale Formation: Cane Hill Member
				Imo Formation
				Pitkin Limestone / Formation
				Fayetteville Shale / Formation: Wedington Sandstone Member
				Batesville Sandstone / Formation: Hindsville Limestone Member
				Ruddell Formation / Shale
				Moorefield Formation / Shale
			Boone Formation	Boone Formation / (Limestone / Chert): Short Creek Oolite Member
			Boone Formation: St. Joe Limestone Member	Boone Formation / (Limestone / Chert): St. Joe Limestone / Member (Formation)
			Chattanooga Formation: Chattanooga Shale Member	Chattanooga Shale / Formation
			Chattanooga Formation: Sylamore Sandstone	Chattanooga Shale / Formation: Sylamore Sandstone Member
				Clifty (Limestone) / Formation
				Penters Chert / Formation
				Lafferty Limestone / Formation
				St. Clair Limestone / Formation
				Cason Shale / Formation: Brassfield Limestone / (Member) Formation
				Fernvale Limestone / Formation
				Kimmswick Limestone / Formation
				Plattin Limestone / Formation
				Joachim Dolomite / Formation
				St. Peter Sandstone / Formation
Everton Formation	Everton Formation			Everton Formation: Newton Sandstone Member
				Everton Formation: Calico Rock Sandstone Member
				Everton Formation: Kings River Sandstone Member
Yellville Group: Black Rock Lithosome	Black Rock Limestone Member		Powell Formation	Powell Dolomite / Formation
Yellville Group: Smithville Lithosome	Smithville Limestone Member			
Yellville Group: Powell Formation	Powell Formation			
Yellville Group: Bull Shoals Member				
Yellville Group: Cotter Dolostone			Jefferson City Group: Cotter Formation	Cotter Dolomite / Formation
Yellville Group: Blackjack Knob Member				
Yellville Group: Gainesville Sandstone				
Yellville Group: Lutie Member				
Jefferson City Dolostone			Jefferson City Group: Jefferson City Formation	Jefferson City Dolomite / Formation

Figure 4 (continued)



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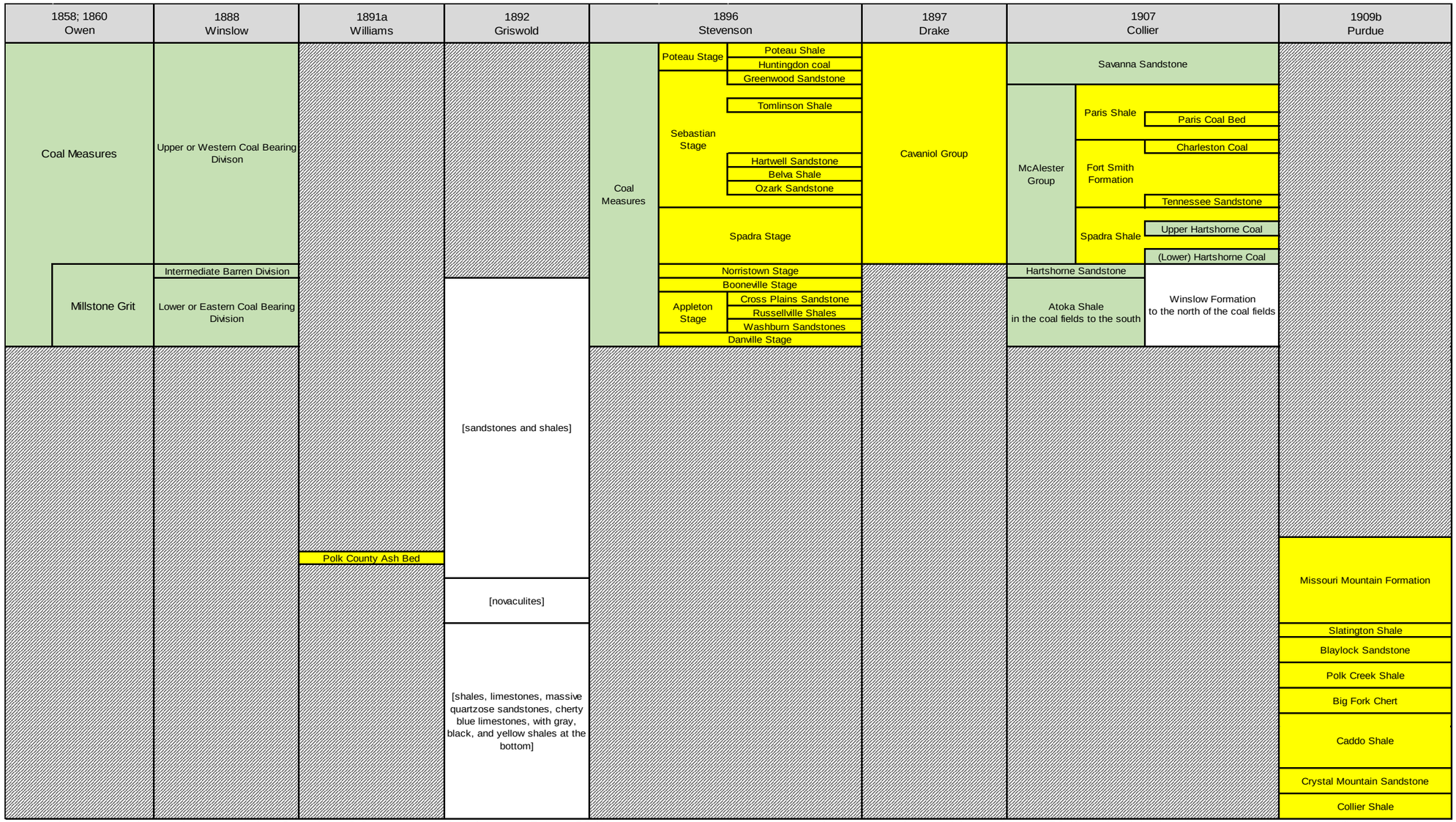


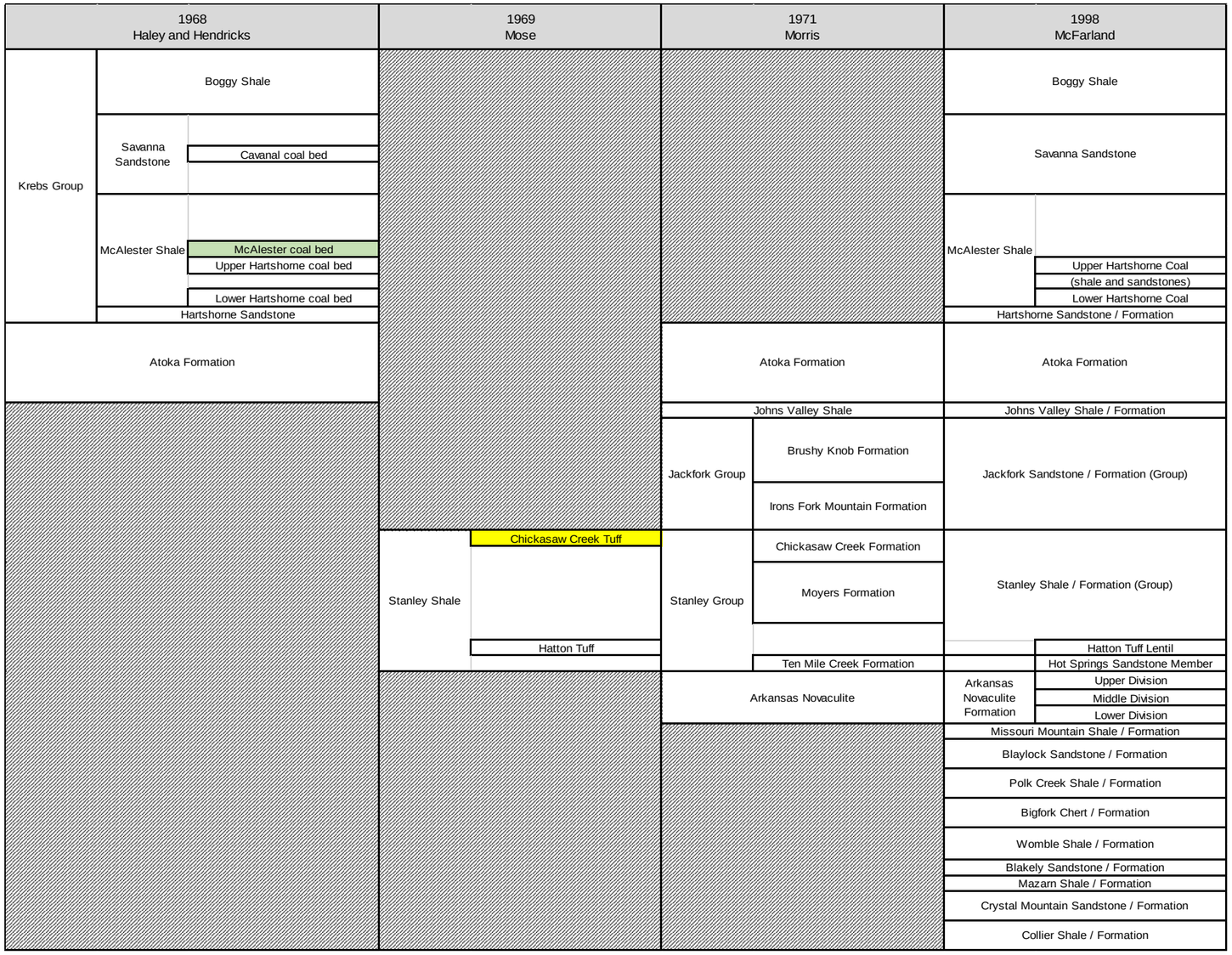
Figure 5. Generalized stratigraphic columns of the Ouachita Mountain and Arkansas River Valley provinces with respect to the nomenclatorial boundaries. Yellow highlighted names indicate the first use of a name that originated in Arkansas. Green highlighted names indicate the first use in Arkansas of a name that originated outside of Arkansas. Note: the Pickartz coal bed has not been correlated and included in this chart.

1909a Purdue	1910 Purdue	1911 Ulrich	1918 Miser	1920 Miser	1927 Miser and Honess	1929 Miser and Stone	1933 Cooper
					Boggy Shale	Savanna Sandstone	
					Savanna Sandstone		
					McAlester Shale	McAlester Group: Paris Shale / Paris Coal; Fort Smith Formation / Charleston Coal; Spadra Shale / Upper Hartshorne Coal; (Lower) Hartshorne Coal	
					Hartshorne Sandstone	Hartshorne Sandstone	
Atoka Sandstone			Atoka Formation		Atoka Formation	Atoka Formation	
						Caney Shale	
Jackfork Sandstone		Jackfork Sandstone	Jackfork Sandstone		Jackfork Sandstone	Jackfork Sandstone	
Stanley Shale	Stanley Shale	Stanley Shale	Stanley Shale	Stanley Shale	Stanley Shale	Stanley Shale	
Fork Mountain Slate				Hatton Tuff Lentil		Hatton Tuff Lentil	
	Hot Springs Sandstone				Hot Springs Sandstone	Hot Springs Sandstone	
Arkansas Novaculite	Arkansas Novaculite	Arkansas Novaculite	Arkansas Novaculite		Arkansas Novaculite	Arkansas Novaculite	Caddo Gap Novaculite / Arkansas Novaculite
Missouri Mountain Slate	Missouri Mountain Slate		Missouri Mountain Slate			Missouri Mountain Slate	
Blaylock Sandstone		Blaylock Sandstone	Blaylock Sandstone			Blaylock Sandstone	
Polk Creek Shale	Polk Creek Shale	Polk Creek Shale	Polk Creek Shale			Polk Creek Shale	
Bigfork Chert	Bigfork Chert	Big Fork Chert / Limestone	Bigfork Chert			Bigfork Chert	
Stringtown Shale		Stringtown Shale	Womble Shale			Womble Shale	
Ouachita Shale		Blakely Sandstone	Blakely Sandstone			Blakely Sandstone	
		Ouachita Shale	Mazarn Shale			Mazarn Shale	
Crystal Mountain Sandstone		Crystal Mountain Sandstone	Crystal Mountain Sandstone			Crystal Mountain Sandstone	
Collier Shale		Collier Shale	Collier Shale			Collier Shale	

Figure 5 (continued)

1935 Stearn	1958 Scull	1960 Haley	1963 Seely	1965 Morris	1967 Walthall
		Krebs Group: Boggy Shale			
		Krebs Group: Savanna Sandstone: Paris coal			
		Krebs Group: Savanna Sandstone: Cavanal coal			
		Krebs Group: Savanna Sandstone: Charleston (Philpott) coal			
		Krebs Group: McAlester Shale: Upper Hartshorne coal			
		Krebs Group: McAlester Shale: Lower Hartshorne coal			
		Krebs Group: Hartshorne Sandstone			
Atoka Formation (Atoka or younger may or may not be present)		Atoka Formation		Atoka Formation	Atoka Formation
	John's Valley Shale (may or may not be present)			Johns Valley Shale	Johns Valley Shale
Jackfork Sandstone (may or may not be present)	Jackfork Sandstone		Jackfork Group: Game Refuge Formation	Jackfork Group: Brushy Knob Formation	Jackfork Group: Game Refuge Formation
			Jackfork Group: Wesley Formation		Jackfork Group: Wesley Formation
			Jackfork Group: Markham Mill Formation		Jackfork Group: Markham Mill Formation
			Jackfork Group: Prairie Mountain Formation		Jackfork Group: Prairie Mountain Formation
			Jackfork Group: Wildhorse Mountain Formation	Jackfork Group: Brushy Knob Formation: Prairie Hollow Member	Jackfork Group: Wildhorse Mountain Formation
				Jackfork Group: Brushy Knob Formation: Irons Fork Mountain Formation	
Stanley Shale: Gap Ridge Member	Stanley Shale		Stanley Group: Chickasaw Creek Formation	Stanley Group: Chickasaw Creek Formation	Stanley Group: Chickasaw Creek Formation
Stanley Shale: Parker Hill Member			Stanley Group: Moyers Formation	Stanley Group: Moyers Formation	Stanley Group: Moyers Formation: Gap Ridge Sandstone Member
					Stanley Group: Moyers Formation: Parker Hill Sandstone Member
			Stanley Group: Ten Mile Creek Formation	Stanley Group: Ten Mile Creek Formation	
	Arkansas Novaculite				
	Missouri Mountain Shale				
	Blaylock Sandstone				
	Polk Creek Shale				
	Bigfork Chert				

Figure 5 (continued)



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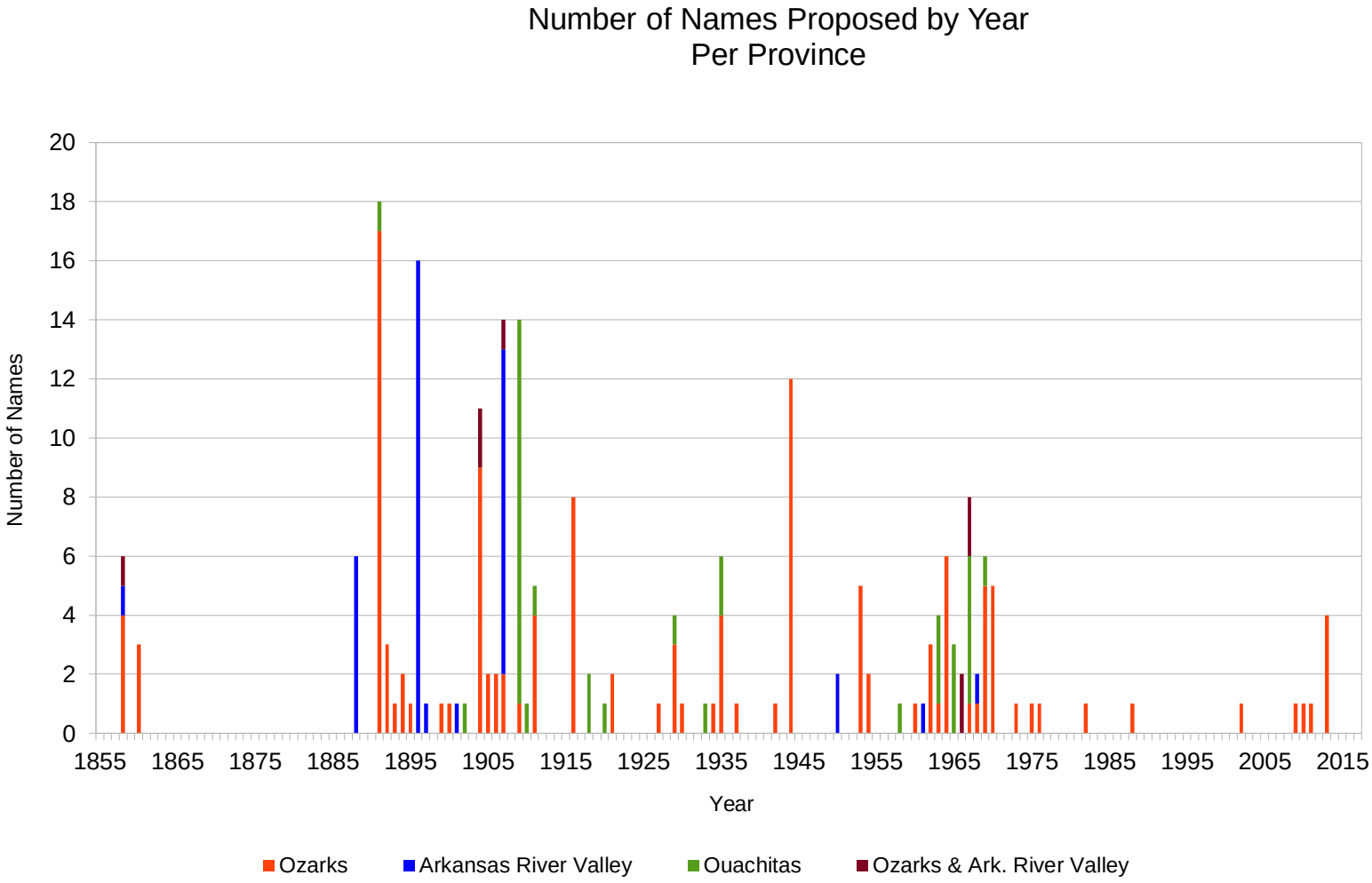

Figure 6. Total number of names proposed for each province per year.

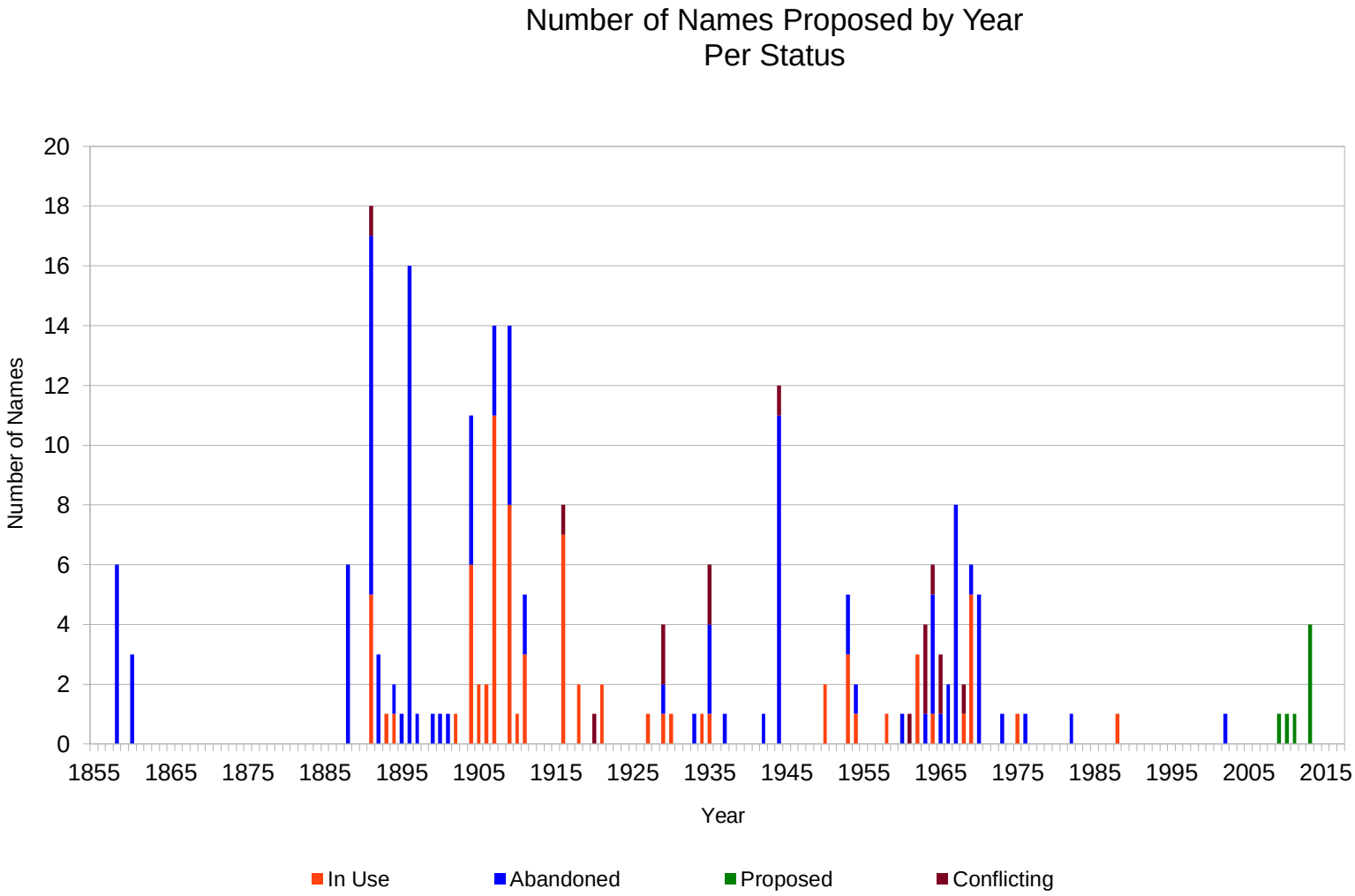

Figure 7. Total number of names proposed for each current status per year.